



**REPORT**

**OF THE**

**DACCA TECHNICAL**

**AND**

**VOCATIONAL EDUCATION**

**COMMITTEE.**

**CALCUTTA :**  
**BENGAL SECRETARIAT BOOK DEPOT.**  
**1924.**

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## PERSONNEL OF THE DACCA TECHNICAL AND VOCATIONAL EDUCATION COMMITTEE AND ITS SUB-COMMITTEES.

The personnel of the Committee was originally as follows:—

- |  |  |
|--|--|
| 1. The Vice-Chancellor of the Dacca University<br>(Mr. P. J. Hartog, C.I.E., M.A., B.Sc.)                    | ... <i>President.</i>                                  |
| 2. Commissioner of the Dacca Division (Mr. A. N. Moberly, I.C.S.)  | } Members.   |
| 3. Principal of the Dacca Intermediate College<br>(Rai B. N. Das Bahadur, M.A., B.Sc., I.E.S.).              |  |
| 4. Chairman of the Board of Intermediate and Secondary Education, Dacca (Rai L. M. Chatterjee Bahadur, M.A.) |  |
| 5. Principal, Jagannath Intermediate College<br>(Rai S. N. Bhadra Bahadur, M.A.).                            |  |
| 6. Principal, Dacca School of Engineering<br>(Mr. C. J. Henderson, C.E., I.E.S.)                             |  |
| 7. Vice-Principal, Dacca School of Engineering<br>(Mr. A. N. Sen, M.A., B.Sc.).                              |  |
| 8. Director of Agriculture, Bengal (Mr. G. Evans, C.I.E.)  |  |
| 9. Professor J. C. Ghosh, D.Sc.  |  |
| 10. " W. A. Jenkins, M.Sc.   |  |
| 11. " N. C. Sen Gupta, D.L.  |  |
| 12. Mr. Dharendra Chandra Roy  | } Representatives of<br>Dacca People's<br>Association. |
| 13. „ Satish Charan Sen, B.L.  |  |
| 14. Mr. K. Nazimuddin, Barrister-at-Law, Chairman, Dacca Municipality.                                       | } Representatives of<br>the Muhammadan<br>Community.   |
| 15. Khan Bahadur K. M. Azam, M.L.C.  |  |
| 16. Head Master, Dacca Collegiate School (Khan Bahadur T. Ahmed, B.A., B.T.)                                 | } Members.   |
| 17. Principal, Dacca Training College (Mr. M. P. West, I.E.S.)   |  |
| 18. Mr. P. K. Sen, B.A. (Head Master, Dacca Pogose School).  |  |
| 19. Mr. U. N. Sen, B.A. (Head Master, Nava Kumar Institution, Dacca).  |  |
| 20. Mr. M. M. Banerjee, M.A. (Head Master, East Bengal Institution, Dacca).                                  |  |
| N. M. Basu, D.Sc., Reader in Mathematics,<br>Dacca University  | ... <i>Secretary.</i>                                  |

Of the above-named members Mr. Evans left on leave in December, 1922, while Mr. Henderson left on leave in April this year. The posts which they filled are now held by Messrs. R. S. Finlow and A. N. Sen, respectively. Mr. West was absent on leave during part of 1923 and was replaced by Mr. M. Mitra.

Rai B. N. Das Bahadur has taken leave on account of illness and the post of officiating Principal of the Dacca Intermediate College is at present held by Mr. A. K. Chanda, I.E.S.

The Committee have co-opted, in consonance with paragraph 6 of the Government Resolution, the following members :—

*(a) For the consideration of Commercial Education—*

- (1) Professor S. G. Panandikar, PH. D., late Professor of Economics and Head of the Department of Commerce in the University. (He has since left Dacca to join a post in the Indian Educational Service in Bombay).
- (2) Mr. S. K. Mukherjee, Principal, Commercial Academy, Dacca.

*(b) For the consideration of Manual and Industrial Training for school boys and vocational courses in Intermediate Colleges—*

- (3) Mr. P. K. Bose, Barrister-at-Law.
- (4) Nawab Khwaja Muhammad Yousuff, Khan Bahadur.\*

*(c) For the consideration of Engineering Education—*

- (5) Mr. L. M. Dickins (Chief Engineer, Dacca Electric Supply Company).
- (6) Mr. W. J. Kerr (Superintending Engineer, Eastern Circle, Public Works Department, Dacca).
- (7) Mr. J. A. Stein (Executive Engineer, Public Works Department, Dacca).
- (8) Mr. R. B. McCormack (Engineer to the District Board, Dacca).
- (9) Mr. Samaresh Roy Chowdhury (Senior Lecturer, Dacca School of Engineering).
- (10) Mr. H. G. Scotter (District Locomotive Superintendent, Eastern Bengal Railway).
- (11) Mr. A. A. Richardson (Executive Engineer, Eastern Bengal Railway).

*(d) For the consideration of Medical Education—*

- (12) Lieutenant-Colonel M. MacKelvie, C.I.E., I.M.S., Civil Surgeon, Dacca.
- (13) Dr. S. K. Das Gupta, Medical Officer of Dacca University.
- (14) Dr. Rajendra Chandra Roy, L.M.S., D.P.H., Assistant Director of Public Health, Dacca.

- |         |   |                                      |
|---------|---|--------------------------------------|
| ** (15) | Rai Barada Sanker Bhattacharjee Bahadur                           | } Teachers, Dacca<br>Medical School. |
| ** (16) | Dr. Akshoy Kumar Sarkar   |                                      |
| ** (17) | Major N. S. Simpson, I.M.S., Superintendent, Dacca Central Jail.† |                                      |
| ** (18) | Suresh Chandra Gupta, Private Practitioner, Dacca.                |                                      |

*(e) For the consideration of Agricultural Education—*

- (19) Mr. R. S. Finlow, B.Sc., F.I.C.

\* We greatly regret to record the death of the Nawab Yousuff which took place in November, 1923.

† Major Simpson went on leave in the spring of 1923.

\*\* These gentlemen are not members of the main committee. They were co-opted by the Sub-Committee on Medical Education.



The Committee appointed the following Sub-Committees :—

(a) *Sub-Committee on Manual and Industrial Training for School-boys*, consisting of—

- (1) Rai L. M. Chatterjee Bahadur (Chairman),
- (2) Khan Bahadur T. Ahmed,
- (3) Mr. M. P. West,
- (4) „ P. K. Sen,
- (5) „ D. C. Roy, and
- (6) „ A. N. Sen.

(b) *Sub-Committee on site for a Central Workshop for School-boys* consisting of—

- (1) Mr. D. C. Roy, and
- (2) „ M. P. West.

(c) *Sub-Committee on Science Teaching in relation to Technical Education in Secondary Schools and Intermediate Colleges*, consisting of—

- (1) Rai B. N. Das Bahadur (Chairman),
- (2) Professor J. C. Ghosh,
- (3) „ W. A. Jenkins,
- (4) Mr. S. C. Sen,
- (5) „ M. M. Banerjee, and
- (6) Khan Bahadur T. Ahmed.

(d) *Sub-Committee on Engineering Education in the District of Dacca*, consisting of—

- (1) Mr. P. J. Hartog (Chairman),
- (2) „ A. N. Moberly,
- (3) „ C. J. Henderson,
- (4) „ A. N. Sen,
- (5) Professor W. A. Jenkins,
- (6) „ J. C. Ghosh,
- (7) Mr. D. C. Roy,
- (8) „ K. Nazimuddin,
- (9) „ L. M. Dickins (co-opted),
- (10) „ J. A. Stein (co-opted),
- (11) „ R. B. McCormack (co-opted),
- (12) „ W. J. Kerr (co-opted),
- (13) „ Samaresh Roy Choudhury (co-opted),
- (14) „ H. G. Scotter (co-opted), and
- (15) „ A. A. Richardson (co-opted).

(e) *Sub-Committee on Technical Education in the University (excluding Engineering)*, consisting of—

- (1) Mr. P. J. Hartog (Chairman),
- (2) „ G. Evans,
- (3) Professor J. C. Ghosh,
- (4) „ W. A. Jenkins,
- (5) Mr. S. C. Sen,
- (6) Professor N. C. Sen Gupta,
- (7) Mr. K. Nazimuddin,
- (8) „ D. C. Roy, and
- (9) Khan Bahadur K. M. Azam.

*(f) Sub-Committee on Commercial Education in Secondary Schools, Intermediate Colleges and the University, consisting of—*

- (1) Rai S. N. Bhadra Bahadur (Chairman),
- (2) Khan Bahadur K. M. Azam,
- (3) Mr. U. N. Seu,
- (4) „ M. P. West,
- (5) Professor S. G. Panandikar (co-opted),
- (6) Mr. S. K. Mukherjee (co-opted), and
- (7) Mr D. C. Roy.

*(g) Sub-Committee on Agricultural Education, consisting of—*

- (1) Mr. G. Evans, C.I.E.,
- (2) „ R. S. Finlow, B. SC., F.I.C.,
- (3) Rai L. M. Chatterjee Bahadur,
- (4) Mr. D. C. Roy,
- (5) Professor J. C. Ghosh, and
- (6) Khan Bahadur K. M. Azam.

*(h) Sub-Committee on Medical Education, consisting of—*

- (1) Mr. P. J. Hartog (Chairman),
- (2) Professor W. A. Jenkins,
- (3) „ J. C. Ghosh,
- (4) Lt.-Col. M. MacKelvie, C.I.E., I.M.S (co-opted),
- (5) Dr. S. K. Das Gupta, M.D. (co-opted),
- (6) „ Rajendra Chandra Roy, L.M.S., D.P.H. (co-opted),
- (7) Rai Barada Sankar Bhattacharjee Bahadur (co-opted),
- (8) Dr. Akshoya Kumar Sircar (co-opted),
- (9) Major N. S. Simpson, I.M.S. (co-opted),
- (10) Dr. Suresh Chandra Gupta (co-opted).

# REPORT OF THE DACCA TECHNICAL AND VOCATIONAL EDUCATION COMMITTEE.

## CHAPTER I.

### Introductory.

1. The Dacca Technical and Vocational Education Committee was created by the Government of Bengal Resolution, of which a copy is annexed (Appendix I, page 33), which appeared in Supplement No. 28 of the *Calcutta Gazette* of July 12, 1922.

2. The Committee have held 17 meetings and the various sub-committees have held 26 meetings.

3. The Chairman informed us at our first meeting that he had had an interview with the Hon'ble Mr. P. C. Mitter, C.I.E., Minister for Education, who had expressed the wish that the Committee should frame an *Interim* Report to be forwarded to him by the end of August, 1922, and deal with proposals for which funds might be found in the Budget for 1923-24, if approved by Government, leaving the main report to be framed later. The Hon'ble Minister met the Committee on the 3rd August, 1922, at Dacca and repeated to the Committee the wish he had previously expressed to the Chairman.

In accordance with this wish we met for the first time on 21st July and we furnished an *Interim* Report in typed copy\* on 9th September, 1922.

4. The *Interim* Report, notwithstanding the short time within which it was prepared, covered a fairly wide field. Unfortunately, presumably owing to financial stringency, no funds were allotted for carrying out our proposals and indeed Government has made no communication to us in regard to them.

We have therefore incorporated these proposals in this, our main report, with such modifications as seemed to us necessary or desirable. In some cases we have, with a view to economy, printed only extracts from the reports of the special sub-committees which were appended to our *Interim* Report. The full text is available for Government in the *Interim* Report, which has not so far been published.

5. The main object of the Government Resolution is indicated in the first paragraph. It is to give a better chance of a decent livelihood to the youths of this country than is afforded by the present system. Both in our *Interim* Report and in our present Report we have kept this end in view. It would be useless to offer vocational education for vocations that do not exist or that are not likely to be created in Bengal.

6. In order that we might make a fairly complete survey of the field of existing vocations we drew up a questionnaire on the occupations actually followed in the Dacca district based on materials furnished by the Census authorities, omitting only from the list certain occupations for which technical instruction of any kind was obviously unnecessary. The list might have been cut down still further but we wished to secure as many suggestions as possible. The questionnaire was circulated to

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\* Printed copies were supplied later.

372 persons or firms. The total number of replies received was only 32. The questionnaire, with a summary of the replies, is printed as Appendix II, pages 36-61.

7. We desire to make it plain that we were not asked to consider the general problem of industrial education, much of which can only suitably be given in trade-schools, that is institutions "whose primary object is the giving of trade-teaching"\* but "technical and vocational education in the schools and colleges of the province." Such institutions as weaving schools, cabinet-making schools, etc., lie outside our purview.

We were also not asked to consider technical or vocational education for girls.

8. In paragraph 9 below, we deal with two important questions in connection with our reference, but we have not thought it necessary in this Report to discuss the general questions underlying the systems of technical education which have been developed, and successfully developed, in Western countries during the last 60 years or more. There are, however, certain aspects of the question which specially affect India. There is the well-known tradition among the higher castes, a tradition which is still strong though it is perhaps weakening that it is degrading for a man belonging to these castes to occupy himself with manual labour. There is also the co-related fact that in the majority of middle class homes, a boy does not learn the use of tools or the use of his hands generally as a boy in the corresponding classes in England or America learns the use of his hands, without any special teaching. It is because of these facts that we regard it as specially desirable that all boys should receive some manual training during the course of their general education at a high school so as to give them, if they are apt by nature to receive it, what the Government Resolution terms "a bias towards practical education."

8a. The question of vocational training at the Intermediate Colleges is more complex. The question arises whether something more than a practical bias can be given in such colleges and whether the vocational education given therein can be made sufficient to enable a boy who leaves them to earn his own living by means of the vocation for which he has been trained. It is to be borne in mind that, as the Sadler Commission pointed out, the majority of boys who enter a college of this kind would probably not wish to make a choice at this stage excluding them from University education in the future, and the question arises whether it is practicable to keep this possibility open for them and at the same time to give them a sufficiently specialised training in any one branch to enable them to earn their living on leaving the Intermediate College. The Sadler Commission thought that it was possible to do so. But the matter is still in an experimental stage and no definite judgment can be expressed on it at the present moment.

We wish to say definitely that we do not think that the training in Mechanical Engineering proposed for the Dacca Intermediate College could be more in any case than a preliminary training. We do not think that a boy who receives such training would be able to earn his living at once in any branch of Engineering without further practical training; but boys who have received such preliminary training would probably get a preference as apprentices in an Engineering firm. They would also as pointed out later be well prepared for pursuing an Engineering course of a University character.

---

\* N. P. Dearle, *Industrial Training* (P. S. King, 1917).

An Intermediate College should not be regarded as an alternative or a rival to such an institution as the Engineering School. We are strongly of opinion that nothing should be done to affect injuriously admission into purely vocational schools. The courses we advocate are for persons who do not wish to join such schools or who cannot find a place in them.

9. In dealing with technical and vocational education there are always two questions to be dealt with in connection with each kind of vocational education proposed :—

- (1) Does the vocation exist already, and if it does exist, is the supply of persons well-trained to follow it less than the demand ?
- (2) If the vocation does not exist, would the supply of persons trained to follow it *create* a demand for their services ?

10. Our report deals mainly with the following topics to be taught in the classes of institutions indicated in each case :—

Drawing and Drill	...	...	} School stage.
Illustrative use of hand-work	...	...	
Carpentry	...	...	
Sheet metal work	...	...	
Fitter's work	...	...	
Physics and Chemistry	...	...	} Intermediate College stage.
Commerce	...	...	
Dyeing	...	...	
Chemistry of oils and fats	...	...	
Mechanical science	...	...	
Commerce	...	...	} Engineering School stage.
Mechanical and electrical engineering.			
Mechanical, civil and electrical engineering.			
Electro-technics (with a more limited scope than general electrical engineering).			} University stage.
General chemical technology	...	...	
Chemistry of oils, fats and soaps	...	...	
Tanning and leather chemistry	...	...	
Botany (with a view to technical applications).			
Bacteriology (with a view to technical applications).			

We might have extended the list but we think that the schemes which we recommend are more likely to find acceptance than a more ambitious scheme.

11. We have had in mind not only the needs of the Dacca district and division, but of Eastern Bengal generally, with a population of over 20 million people, of which Dacca was once the capital and is still the most convenient centre, with easy communications by rail and steamer and with educational facilities provided by numerous high schools, two intermediate colleges, an engineering school, a medical school, an agricultural school and research station and a university. Such educational facilities are to be found nowhere else in Bengal except in Calcutta.

kind of training, viz., either carpentry or fitter's work or sheet-metal work. Drawing should be continued, but in these classes it should be geometrical and mechanical drawing. These subjects might perhaps be taught by a teacher or teachers going round the different schools. It is clearly to be understood that the training given in classes VIII and IX must be regarded as hand-and-eye training and that it would not, without further work, fit a boy for any trade.

**Special Course of Manual Training in Class X treated as an examination subject.**

21. We think that a limited number of pupils, say 36 in all, out of those who have been trained in classes VIII and IX, should be permitted, in class X, to take a more advanced course of manual training in one or more of the subjects which they have been learning in the two previous classes. They might take their training in the workshop on Saturdays, which have been left free. In their case manual training should be a part of the regular High School course and be an important examination subject. In order to show the exact nature of our proposals we suggest the following Matriculation or High School examination scheme for boys taking this subject:—

Vernacular—1 paper; English—2 papers; Mathematics (general)—1 paper; Mathematics (applied)—1 paper; Drawing—1 paper; Manual Training equivalent to—2 papers.

22. We recommend that after passing the Matriculation or High School examination with this course, students should be permitted either to enter the Dacca School of Engineering or to proceed to one of the intermediate colleges and to take the ordinary Intermediate Science course or the Mechanical course at the Dacca Intermediate College which is recommended in paragraph 32, below.

**Central workshop.**

23. We have submitted to Government in our *Interim Report* details of two sites, which need not be repeated here.

It will be seen that we have elaborated the proposal made in the Government Resolution that there should be a central workshop for manual training for school-boys and have put forward two possible sites for the workshop. We are of opinion that from the point of view of position the National College site, that is No. 5 of the Site Sub-Committee's Report (*Interim Report*, Appendix B; see also Appendix A, Section 6) is the best, but that the site behind the madrasah (No. 2 of the Site Sub-Committee's Report), which would be less costly, would suffice. It will be seen that the cost of the first named site would be about Rs. 70,000 including the cost of repairs to the building. The second site was, we are informed, originally acquired by Government for the Telegraph Department at a cost of Rs. 20,663-0-9.

24. Details of the equipment of the workshop and of the staff are given in Appendix III, pages 62-64, below.

**Science Teaching.**

25. An elementary training in physics and chemistry is given, we believe, in secondary schools in all other civilised countries in the world,

yet it hardly exists in the schools of Bengal, partly no doubt because of the expense involved in providing laboratories. But we regard it as of great importance that a sufficient amount of science should be taught at this stage to enable boys to discover whether they have a taste for science and to give some preliminary knowledge of the subject to those who have already discovered such a bent.

26. We propose that for students who wish to proceed to higher technological studies the following special course should be provided for the High School examination;—

1. Vernacular—1 paper; 2. English—2 papers; 3. Pure Mathematics—1 paper; 4. Applied Mathematics—1 paper; 5. Elementary Science—1 paper; 6. Drawing and Practical Geometry—1 paper.

(The syllabuses of these subjects will be found in Appendix IV, pages 65-66 below).

Each pupil should also be required to produce a certificate from the head master of the school from which he is sent up of having gained some practical workshop practice, for instance, in carpentry or sheet-metal work and in the handling of tools generally.

27. We recommend that, as a first step towards the introduction of Science teaching in the high schools, Government should provide an elementary Physical and Chemical Laboratory for the Dacca Collegiate School. In the opinion of the Sub-Committee which reported on this subject the one-storied building in the annexe to the main school building which once formed the laboratories of the old Dacca College appears to be quite suitable for reconversion into Science laboratories. The classes at present held in those rooms should be shifted elsewhere. It would be quite feasible to build another storey over the roof where these classes could be held\*. The proposed laboratory would accommodate 40 pupils at a time which would mean a maximum capacity for 80 science students in each of the classes IX and X of the Dacca Collegiate School and the staff proposed would be sufficient for the purpose. Details of the staff proposed, with estimates of capital and recurring expenditure are set out in Appendix V, pages 67-68 below.

#### **Commercial Teaching.**

28. We recommend the introduction of simple book-keeping as one of the additional optional subjects for the High School Examination. The syllabus proposed is given in Appendix VI, page 69 below.

The object of this course will be to give those who take it up sufficient training to make them useful in modest business concerns, for example, shop-keeping, order supply business, etc. Instruction in this course could be provided at a comparatively small cost. One teacher, on Rs. 75—5—150, could easily teach the pupils of two schools and this would mean an approximate initial recurring expenditure of Rs. 450 per annum per school. The non-recurring expenditure per school would be only about Rs. 100. We recommend that as an experimental measure a teacher on Rs. 75—5—150 should be attached to the Intermediate Board or to a Government High school and be available to give assistance in other schools.

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\* We have received an assurance on this point from Mr. B. G. Gwyther, who has succeeded Mr. W. J. Kerr as Superintending Engineer, Eastern Circle, P. W. D.

## CHAPTER III.

**Intermediate Colleges.**

29. At present physics and chemistry are taught at both the intermediate colleges in Dacca. Courses in botany, in commerce, and in dyeing, are also given at the Jagannath Intermediate College.

30. We propose the addition of two further courses\*—

(1) An elementary course in the technology of oils, fats and soaps at the Jagannath College.

(2) A mechanical science course at the Dacca Intermediate College.

31. A course in oils, fats and soaps could not be established at the Jagannath College without a considerable increase in laboratory accommodation, unless the second year's teaching (say two half-days a week) were given in the University laboratory for Technology proposed in paragraph 54 below. We understand that apart from this item the additional expense required would be very small and could be met from the normal income of the college (*see* Appendix VIIA, page 72 below.)

**Mechanical Course at the Dacca Intermediate College†.**

32. The Committee are divided in opinion in regard to the establishment of a mechanical course at the Dacca Intermediate College. The majority of us are in favour of establishing such a course, which was recommended by our sub-committee on science teaching in relation to technical education in secondary schools and intermediate colleges. They think it would be of distinct advantage to introduce such a course in a college of the intermediate type and would lead boys who have had a mainly literary training to turn their attention to engineering. The minority are opposed to it on the ground that the task and function of developing any educational courses in engineering for Dacca and the Dacca district above the high school stage and below the University stage should be assigned to the Dacca School of Engineering and that the creation of the course would be uneconomical. The Committee, as will be seen below, are unanimously in favour of extending the teaching of the School of Engineering and of providing a University course in engineering in which the School of Engineering would co-operate.

33. We give below the scheme of subjects which we suggest for the Intermediate Examination on a course of this kind :—

1. English—1 paper ; 2. Vernacular—1 paper ; 3. Mathematics—2 papers ; 4. Physics—3 papers, (the 2 papers of the general Science Course and a third on the Principles of application of Heat in Engineering and elementary bases of Applied Electricity) ; 5. Chemistry—1 paper on Inorganic Chemistry ; 6. Drawing—1 paper (Applied Mechanics and Designing of simple machine elements) ; 7. Workshop test—equivalent to 1 paper in two of the following, viz., (1) Foundry, (2) Smithy and (3) Fitters' Shop.

\* We would also advocate the introduction of a Science course at the Eden Intermediate College (Girls'), but, strictly speaking, vocational education for girls lies outside the reference of the Committee.

† An earlier scheme placed before Government in 1921 by the Dacca Board of Intermediate and Secondary Education was referred to us by Government, but we prefer the scheme which we now submit.



34. We recommend that, for admission to the mechanical course, preference should be given to those matriculates who have taken Science in the high school stage and have also gone through a course of practical training in (a) carpentry, (b) fitters' work or (c) sheet-metal work. (See above.) A student who had taken the advanced mechanical course at a high school in classes VIII, IX and X would thus go through a four or five years' course of practical work in workshops (three years in school and two years in the intermediate college) and would be admirably fitted for higher engineering or technological education in the University. We suggest that each student should work in the workshop for two periods of three hours each.

35. In our view it would be desirable to erect a workshop equipped in the manner suggested for not less than 20 students each to work simultaneously. We have entered into details in the preliminary report (see *Interim Report*, Appendix C, paragraph 3). The *Interim Report* shows that this accommodation would considerably exceed that which would be needed by the college in view of the fact that not more than 120 students (60 in each year) would be likely to take up the course and that students could not be expected to devote more than six hours a week to the workshop. But it is suggested that the workshops will be utilised not only by students of the Dacca Intermediate College but also by the students of the Jagannath Intermediate College and the proposed other intermediate colleges in the Dacca town and by University students, if and when University courses in civil, mechanical and electrical engineering are established as we desire that they should be.

36. We suggest that the workshop should contain a smithy, a foundry and an advanced fitters' shop and have given estimates which have been modified in certain details after being submitted to the authorities of the Industries Department, who have kindly criticised our scheme (See Appendix VII, pages 70-71 below).

37. The plan of the new buildings of the Dacca Intermediate College should be modified so as to include a large drawing hall to be used by students taking up the mechanical course.

#### **Commercial teaching at Jagannath Intermediate College.**

38. We understand from the authorities of the Jagannath Intermediate College that owing to the increased number of students taking up the commerce course an additional staff of three lecturers is necessary and we endorse as reasonable their demand for this increased staff and for a moderate grant of capital expenditure, estimates of which are appended. The staff proposed includes one additional lecturer in accountancy, one in history and one in mathematics for the other parts of the commercial course. Details of the course in commerce which we propose, with estimates of capital and recurring expenditure, are set out in Appendix VIII, page 73 below.

39. We propose the following scheme for the Intermediate Examination in Commerce :—

1. English—1 paper; 2. Vernacular—1 paper; 3. Economics—2 papers; 4. Book-keeping and Simple Accountancy—1 paper; 5. Methods of Business, Précis writing—2 papers; 6. Commercial Geography or Shorthand—1 paper; 7. History or Mathematics—2 papers.

We suggest that the syllabuses of these subjects should be the same as those framed by the Intermediate Board except that we propose slight modifications in the syllabus for mathematics and commercial correspondence and a revision of the syllabus for history. In mathematics, we think, a test of rapid calculation in fundamentals should be insisted upon, while penmanship should be included in the syllabus for commercial correspondence, which we have divided into two parts. We are of opinion that the history syllabus should be revised so as to include, in addition to pure political history, a short history of the growth of commerce and of the modern economic development of the principal countries.

## CHAPTER IV.

### Asanullah Engineering School, Dacca.

40. We quote the following from paragraph 5 of the Government Resolution:—

“There remains the question of providing a suitable course of engineering and medical education in connection with the University of Dacca. The development of these departments is essential for the complete organisation of the University, but owing to the heavy cost which it will entail, it is doubtful whether much can be done in this direction now. There is, however, the possibility of expanding the Dacca Engineering School so as to provide not only for a degree course but also for a training in such subjects as railway, mechanical and electrical engineering and this question will be taken into consideration.”

41. In our *Interim* Report we put forward certain proposals (on the lines indicated by the Government Resolution) for re-establishing at the Dacca School of Engineering the mechanical and electrical engineering course of the “Upper Subordinate” standard which formerly existed there. The course itself, we understand, was successful, and we have no doubt that this vocational course would produce men who would be able to earn their livelihood immediately on leaving the School. We are informed that the proposals which we put forward were practically identical with those put forward by the authorities of the School. We have received no information from Government in regard to this matter, but we understand that Government have for the moment rejected the suggestions of the Committee. We desire, however, to renew our recommendation both because we think our proposals sound taken by themselves and because they form part of a joint scheme for the provision of a course in electro-technics by the co-operation of the School of Engineering and the University. (It would, of course, be possible to establish the University course in electro-technics independently of the School of Engineering, but this would mean increased capital and recurring expenditure.)

We believe that it is part of Government policy not to admit to a course, such as is proposed, boys who have not had some previous practical training in an engineering workshop. We should raise no objection to such training being made a condition of admission to the course. The railway workshops at Kanchrapara, at Dacca, and at Chittagong as well as private firms could supply it.

### Scope of the Scheme.

42. The course as now proposed would be one of three years' duration at the Dacca Engineering School followed by a year's practical training, that is, it would correspond to the Upper Subordinate course in the Civil Engineering Department and it would also be of approximately the same length and standard as the non-University mechanical and electrical course of the Bengal Engineering College, Sibpur. In the future, should the University of Dacca wish to collaborate with the Dacca School of Engineering in the work required for degree courses of the University in mechanical and electrical engineering, the above schemes would form a suitable stem on which to graft such higher courses. Further details are given in Appendix IX, pages 74-76 below.

43. Under the Government of Eastern Bengal and Assam the Dacca School of Engineering had a small mechanical and electrical engineering section. The course pursued was that of the "Joint Technical Examination Board"; that is, a three years' course, at the end of which successful students obtained the diploma in mechanical and electrical engineering of the Joint Technical Examination Board. On the annulment of the partition of Bengal, Government (on the ground, we believe, that Calcutta was a more suitable place for holding such classes) maintained the course at the Sibpur Engineering College, Calcutta, but abandoned the course at the Dacca School of Engineering.

Events have moved rapidly since then. It is submitted that the course at Sibpur cannot deal with the demand, and moreover that it is not possible for all the students of Eastern Bengal to take advantage of the Sibpur course and that they ought to be given local facilities for studying the mechanical and electrical branches of engineering.

A large number of Bengal students now go to the University of Benares for training in engineering.

## CHAPTER V.

### THE UNIVERSITY.

#### Engineering Education in the University (exclusive of the course in Electro-technics).

44. In our *Interim* Report we made proposals for a course in electro-technics, of which details will be given below, designed with a view to providing at comparatively small expense a training which would fit University graduates for certain careers in which a living is to be made. But in accordance with the terms of the Government Resolution we have now considered the wider question of University training in civil, mechanical and electrical engineering. We are in agreement with the proposals of the Engineering Sub-Committee which we print in full in Appendix X (pages 77-88 below) and which we briefly summarise in the following paragraphs.

45. It will be seen that the Sub-Committee have made enquiries in regard to the demand for engineers and are satisfied that the supply of trained engineers is not in excess of the demand. It is to be pointed out that the increased number of appointments on railways open to students trained in India will widen the field of employment for engineers. Allowing for shrinkages, we suggest an output of 14 civil engineers and 16 mechanical and electrical engineers a year.

We also trust that a share in the number of posts guaranteed by Government may be allotted to graduates from the engineering faculty, subject to their fulfilling such further conditions in regard to practical training as Government imposes in other cases on University graduates. But our proposals do not depend on the acceptance of this suggestion.

46. We propose the establishment of two four-year courses—(a) a course in civil engineering and (b) a combined course in mechanical and electrical engineering.

47. We recommend further that these courses should be given under a joint arrangement between the University and the Dacca School of Engineering. We fully recognise that joint arrangements are not always easy to work. But the advantages of the joint scheme on the ground of economy both in capital and recurring expenditure are so great that these difficulties should be surmounted. The University has already an admirable staff of teachers in mathematics, physics and chemistry, with the necessary equipment of books and apparatus for those subjects, and no new heads of departments would be required to provide the teaching in these subjects, nor would the additional apparatus required be expensive. We ought, however, to point out that unless new laboratories were built it might be necessary to give engineering students a preferential right as compared with ordinary pass students, as the University laboratories are already full.

48. The Dacca School of Engineering would naturally need larger additions to its staff and equipment: but the use of the present organisation and equipment as a basis would save a great deal of expenditure which would otherwise be necessary.

We are of opinion that the new teaching should not be made to involve any additional burden for the present teachers of the engineering school, which, it is understood, is already understaffed. If the Principal of the School is asked to take higher teaching work for the University it will be necessary for him to be relieved of a portion of his present administrative duties by the appointment of a responsible administrative officer, since the addition of the University course will certainly increase the work of the administrative staff.\*

49. The entrance test for ordinary students should be the Intermediate Examination in Arts or Science supplemented by a special test in mathematics (including mechanics), physics and chemistry, elementary drawing, and general knowledge. We think the University should also devise a special examination which could in itself be regarded as the equivalent of an "Intermediate Examination" to be taken by students who already possess the Upper Subordinate certificate for the theoretical course only of the Joint Technical Education Board and for other students who have followed a practical course such as that given at Kanchrapara. Students starting with the practical knowledge given by such a training would have a great initial advantage in following a University career, which is not open to them at present.

\* We have made an approximate calculation of the recurring cost per student, with a view to a comparison with existing institutions. It is not easy to state exact figures for institutions providing training for different kinds of students. Thus at the Bengal Engineering College, Shibpur, there were, in 1921-22, 87 civil engineering students, 232 apprentice students and 40 artisans. Assuming the cost of an artisan to be one-eighth of that of an engineering student or apprentice we get a total number expressed in terms of engineering student—325. The total expenditure on salaries, establishment and contingency excluding the expenditure on the Medical Officer's department (and exclusive of leave and pension allowance) was Rs. 2,52,498. This makes the total cost per engineering student Rs. 777 only.

The expenditure including all items amounted to Rs. 2,91,197 which works out at Rs. 896 per student.

50. We do not propose that the University should be responsible for the practical training which forms an essential element in the training of every engineer, and which he should receive either before or after, or partly before and partly after, he has pursued his University course. This should be controlled by the Dacca School of Engineering, or, for candidates for posts under Government, by the Public Works Department. There is no reason why this practical training should be taken in the neighbourhood of Dacca.

#### Course in Electro-technics.

51. We propose, in addition to the four-year course in mechanical engineering, a three-year course leading up to an Honours degree in Physics with electro-technics as a special subject, to be arranged jointly by the University and the School of Engineering with practical training in the Power-station of the Dacca Electric Supply Company. Our proposals (which were included in our *Interim Report*) are based on the reports of a Sub-Committee, printed as Appendices XI (pages 89-90 below) and XII (pages 91-92 below). We have no doubt that students who have successfully pursued such a course will find employment in Power-stations, or in the works of motor-car firms, tramway firms, general electrical firms or other firms making use of electric power, or as assistants in wireless stations. The students in question would also be qualified to set up electroplating workshops of their own with only a modest capital. It will be seen that we propose a maximum of 24 students in each year, or a total number of 72 students.

52. Our proposals were originally based on the assumption that the scheme for establishing a mechanical and electrical (non-University) course at the Engineering School would be accepted by Government. As we have said above (paragraph 41) we trust that the matter may be reconsidered, but the Sub-Committee have furnished alternative estimates on the hypothesis that the University may have to provide the whole cost. In this estimate they have not included the cost of a mechanical and electrical laboratory and the cost involved for this building has not been estimated. The laboratory might be erected in the neighbourhood of the present Power-house\* (now used as a godown) which, we think, should be employed as a technological laboratory.

53. We desire strongly to urge the establishment of this electro-technical course especially if the scheme for the establishment of a

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The total additional initial recurring cost proposed for the University Engineering scheme is Rs. 84,500 per annum, which amounts to Rs. 423 per student. To this cost must be added the proportion of the general expenditure at the University and the Engineering School which should be allocated to the Engineering Departments. The increase in the general expenditure would be relatively small for an addition of 200 students to say 1,100. The problem is complicated by the fact that the general expenses of the two institutions, the University and the engineering school, have both to be taken into account and each institution has students following different courses of which the expense is different. As at Sibpur, an exact apportionment of general expenses is impossible as between the different classes of students. The share of general expenses could hardly exceed 25 per cent. of the cost stated above so that the maximum initial expenditure would be say Rs. 530 per student. Even allowing for increases in salaries the ultimate cost would be unlikely to reach Rs. 730, which is still considerably below the Sibpur figure.

The existence of administrative departments and teaching departments already maintained for other and cognate purposes would make the creation of an engineering faculty at Dacca possible on a relatively economical basis.

We have not taken into account either at Dacca or Sibpur the fees paid by the students, which diminish *pro tanto* the cost to Government of their education.

\* This is a building to the south of the former Dacca College, originally designed as a Power-house, when Government intended to provide its own electric supply for the Ramna area. The supply is now provided by a private company and the old Power-house was unused until recently.

University engineering course is postponed for want of funds. The machinery for the electro-technics course could obviously be utilised later for the general University course in mechanical and electrical engineering.

#### **Courses in Chemical Technology.**

54. We further recommend the establishment in the University of courses in chemical technology in addition to the present provision of commercial analysis. We suggest a general course in chemical technology and a post-graduate course in the technology of oils, fats, soaps and candles. As Government are aware, this branch of industry is of extreme importance in Bengal and we have no doubt that students who pass successfully through the courses of which details are given below would find no difficulty in obtaining employment. We do not think that the supply would be likely to exceed the demand, for the production of the raw materials is of such a magnitude that the supply of experts would, we believe, lead to the investment of further capital in these industries. Oil seeds to the value of 299 lakhs of rupees were exported from Bengal in the year 1921-22 (Report on the Maritime Trade of Bengal for 1921-22, by A. H. Lloyd, Collector of Customs, Calcutta). We are informed that a very large amount of soap of an inexpensive kind is already being made in Dacca.

55. We now deal in further detail with these proposals. But we must point out at the outset that for chemical technology as for electro-technics (and as for tanning), some teaching in mechanical engineering is essential and provision must be made for it either in the engineering school or in the University itself. We have suggested the appointment of a Reader in Mechanical Engineering with an assistant.

56. We deal first of all with the question of the general course in chemical technology. The B. SC. Honours Course in Chemistry as given in the regulations of the Dacca University, now in force, includes Applied Chemistry as one of the subjects of study. Provision has already been made for a practical course in Commercial Analysis, but no arrangement has as yet been made for chemical technology as such. In the graduate course, specialisation in one branch of chemical industry would be undesirable for the production of real experts. A general training in the more important branches of chemical technology is essential for all. We accordingly suggest that an Honours course in technical chemistry should be instituted with the object of giving the students a thorough practical and theoretical knowledge of (1) the principles of design and working of the chief types of chemical plant and machinery and (2) the chief chemical technological processes, which should include, among others, the technology of water and fuel, which are the basic raw materials for all industries.

57. For students taking up chemical technology, an elementary course in mechanical engineering should form a subsidiary subject of study. For purposes of admission, the students who have passed an Intermediate Examination including some engineering training might be given preference, but it would be unwise to confine the selection only to these students. The University course should be a self-contained one to which all students who pass a special test in drawing should be admitted. The course in mechanical engineering for these students should extend over

two years (three hours' lecture, with six hours' practical work each week) and should include—

- (1) Applied Mechanics and Mechanical Engineering;
- (2) Physical properties of materials of construction; compatibility of materials; and
- (3) Generation and transmission of Power.

Possibly the authorities of the Engineering School might make arrangements for a course of practical work in mechanical engineering for students of chemical technology. Obviously the present pass course syllabus in physics and mathematics now taken by Honours students in chemistry would need to be modified for Honours students in technical chemistry, as otherwise they would be overburdened. The following is suggested as an outline scheme of teaching and examination which may need to be modified in detail :—

(i) Chemistry—

- |   |   |                          |
|---|---|--------------------------|
| <ul style="list-style-type: none"> <li>(a) Theoretical</li> <li>(b) Inorganic</li> <li>(c) Organic</li> <li>(d) Principles of analytical chemistry</li> <li>(e) Some important chemical technological processes.</li> </ul> | } | Four theoretical papers. |
|---|---|--------------------------|

*Practical work*—Eighteen hours' examination, to include commercial analysis and technological workshop test.

- (ii) An elementary course in mechanical engineering. One theoretical paper and one practical paper.
- (iii) *Physics*—Two theoretical papers on heat, thermodynamics, electricity and magnetism.

There need be no examination in practical physics. The physical chemistry practical work for these students, which includes experiments on thermometry, calorimetry, properties of electric currents and measurement of E.M.F. ought to be sufficient. Besides, the students would do some experimental work on general properties of matter in the testing room of the mechanical engineering laboratory.

- (iv) *Mathematics*—Two papers on calculus, analytical geometry and higher trigonometry.

Details of capital and recurring expenditure are given in Appendix XIII, pages 93-96 below.

#### Technology of oils, fats and soaps.

58. We propose a one year's course in the technology of oils, fats and soaps leading on to an M.Sc. degree for those who have taken the Honours Degree in Technical Chemistry.

We have given in Appendix XIII (pages 93-96) details and estimates of the cost of the scheme on the hypothesis that the Power-house will be utilised. It might be suggested that the capital cost might be reduced by using electric power from the mains instead of steam, but a knowledge of the use of steam-power is very desirable for the technologist; and steam is necessary for certain technological processes so that a steam boiler would be necessary in any case though it would not need to be so large if electrical power were provided from the mains.

### Tanning and Leather Chemistry.

59. We have had the great advantage, since we reported on this matter in our *Interim Report*, of receiving the advice of Dr. Meek, the Director of Industries, and Mr. B. M. Das, M.A., M.Sc., the Director of the Government Research Tannery, in this matter, which Dr. Meek and Mr. Das discussed verbally with the Committee at a conference held on April 26, 1923. As a result of that conference Mr. Das has drawn up the scheme printed in Appendix XIV (pages 97-104) below which we approve generally.

60. We quote a portion of the opening passages of the report which sets forth the general object of the scheme :—

“As yet, not only in Bengal but all over India, there is a great dearth of these technically-trained men, necessary for the tanning industry. It may be asked if there be a demand in the country for them. The question may be answered in the affirmative with some limitation. The tanning industry is still in the process of development in the country ; tanneries using modern methods are as yet limited ; one of the reasons of the slow development of tanning industry is the dearth of sufficient technical knowledge in the country. Indian raw material is extensively turned into commercial leather in the West by Western skill and knowledge. The leather sells well in the world's markets. Had there been the knowledge and experience for turning out similar goods in India from local materials, those would have sold in the world's markets and a thriving industry in the country would have been the result. The raw material is there, the market for the leather is also there, technical knowledge and investment of capital in tanning are what are needed.

“The former will inspire the latter. To ask capitalists to invest money in an industry for the efficient conduct of which proper men are lacking, would be more or less putting the cart before the horse.”

According to the Official Report on the Maritime Trade of Bengal for 1921-22, by Mr. A. H. Lloyd, nearly 30,000 tons of raw hides and skins were exported from Bengal in 1921-22. The leather industry has been depressed since the War. For the five years 1909-10 to 1913-14 the average weight of raw hides and skins exported was about 55,000 tons.

61. Mr. Das has proposed four different (but partly overlapping) courses :—

- (1) A B. SC. (Honours) Course in Leather Technology to extend over three years, like Honours Courses in other subjects, for students who have taken an Intermediate Examination in Science, and two years for those who have taken a Pass B. SC. course.
- (2) An M. SC. (Research) course for those who have taken the B. SC. Degree in Leather Chemistry.

He also suggests—

- (3) that the resources of the laboratory should be used to train foreman tanners who would start from the “Matriculation” stage and take a diploma course of three years ; and
- (4) that “Special” courses extending over a maximum of six months should be provided for persons who are already in the trade.



62. In the view of Mr. Das the courses should include not only Physics and Chemistry and Accountancy which are already taught in the University, but also elementary Botany, Bacteriology and Mechanical Engineering, of which we have recommended the introduction in connection with other subjects (see paragraphs 44 and 67—74).

63. Mr. Das has furnished us with a plan of the proposed Leather Department which will be forwarded to Government with this report. Dr. Meek and Mr. Das inspected the University sites with the Chairman of the Committee and Professor Ghosh and came to the conclusion that the best site available would be between the University Court-house and the *jhil* lying to the east of it. This site would give the necessary room for future expansion.

We think that it might be more economical to use power for the tanning laboratory from the Dacca Electric Supply Company's mains than from a 20-H. P. oil engine if, as is possible, the Company would make special terms for such power.

64. We desire to point out that Dacca is a very important centre for the hide trade\*. Although there are no tanneries using machinery in the district at present, no better centre could be established for such tanneries, especially in view of the fact that tanneries do not require a large amount of power involving the use of coal. Oil engines and electric power would be amply sufficient for the establishment of the industry.

A valuable pamphlet has been issued by the Department of Industries, Bengal, on small tannery schemes† with estimates for six schemes requiring a capital ranging from Rs. 5,000 to Rs. 45,000, and estimated to bring in returns varying from about 16 to 30 per cent. on the capital invested.

65. An important factor in tanning is the quality of the water available. In a report on the investigation of the Indian Tannery Works, issued by the Calcutta Research Tannery (Bengal Secretariat Press, 1921, page 10) it is stated that—

“All the waters from the town of Dacca and near it are good. Both soluble matters and hardness are low. Waters were collected from three different places of the river Padma, one at Narayanganj, the second at Tarpassa and the third at Goalundo. All the three water samples are good and as one goes up from Goalundo towards Narayanganj, the water improves in quality. On the whole the water of the Padma is much better than that of the Ganges near Calcutta.”

66. The fact that Dacca is a great distributing centre for raw hides shows that difficulties of transport could not arise. A serious attempt to develop the tanning industry in Eastern Bengal would be of the greatest possible benefit to the province as a whole; and the fact that the Superintendent of the Research Laboratory in Calcutta, which is doing such excellent work, is in favour of the establishment of a teaching centre at Dacca constitutes strong *prima facie* testimony in support of our proposals.

#### Botany and Bacteriology in relation to Agriculture.

67. Agriculture is the greatest industry of Bengal and might be expected to provide employment for a very large number of experts. As

\* A certain class of cow and buffalo hides are known in the trade as “Daccas”.

† Bulletin No 15 of the Calcutta Research Tannery, (Bengal Secretariat Press, 1923. Published gratis.)

a matter of fact it provides employment for very few, though between 70 and 80 per cent. of the whole population live on the land (Census Report). The subject was investigated by the Calcutta University Commission who showed that Bengal cannot afford, under present conditions, to employ a large number of agriculturists trained as agriculturists are trained in Great Britain, on the Continent, and in America, because of the small size of the average holding. Nevertheless the Commission recommended that a beginning should be made of higher teaching in Bengal by the establishment of Faculties of Agriculture, in the first instance in connection with the University of Calcutta, and later at Dacca.

68. We have taken fresh opinion on the matter and while we refrain from proposing the immediate establishment of a Faculty of Agriculture at Dacca, we put forward, on the basis of this expert advice, proposals which will, we believe, if adopted, materially advance agriculture and provide important avenues of employment for our young men. We may say at the outset that our schemes are not intended to meet the very limited demand for officers in the Department of Agriculture. Our position will be best explained by citing here extracts from a report of a University Committee on agriculture which has been communicated to us and of which Mr. G. Evans, C.I.E., then Director of Agriculture, and Major Carbery, D.S.O., of the Agricultural Department, were members, and also an important note by Mr. Evans supplied to our Committee.

69. Extract from report of University Committee on Agricultural Education—

"3. In the opinion of the Committee the most useful step which could be taken at present by the University of Dacca for the training of agriculturists would be to give preliminary instruction in—

- (i) Botany (including Mycology).
- (ii) Bacteriology, a subject which might be taught in connection with the Department of Chemistry.
- (iii) Bio-Chemistry.

The Committee think it would be premature to start a Faculty of Agriculture in the University.

"4. *Proposed Department of Botany.*—The Committee are opinion that the initial staff of the Department of Botany should consist of the following:—

- (i) A Professor, who should have specialised either in systematic Botany or in Physiological Botany.
- (ii) A Reader, who should have specialised in one of the two branches above named, not specialised in by the Professor.
- (iii) One or two Assistant Lecturers.

The Department should possess a laboratory with sufficient accommodation for 50 students altogether and should aim at turning out 15 men a year. It should also possess a Herbarium and a garden provided with the most important types of plants.

"5. *Bacteriology.*—The Committee recommend the appointment of one Lecturer and one Demonstrator and the provision of a laboratory for 20 students, and a small room for the staff.

"6. *Bio-Chemistry.*—The Committee recommend the appointment of a Professor or Reader and think that in order to fill the post it would probably be desirable to send some one with an adequate preliminary training to be specially trained in Bio-Chemistry in Europe.

They recommend the provision of a laboratory for 20 workers.

"7. *Library Provision.*—The Committee desire to point out that in starting the new subjects proposed the University will be obliged to make adequate capital and recurring grants for the provision of books and periodicals requisite to carry on the teaching with efficiency."

70. Note by Mr. G. Evans, C.I.E., late Director of Agriculture, Bengal—

#### Botanical Education.

"So far as the development of agriculture is concerned, the need for trained botanists is becoming more and more apparent. In all the provinces of India the Agricultural Department has found that the most rapid economic results have been obtained by the introduction of improved varieties of crops. In other directions, such as the introduction of improved machinery, artificial manures, etc., progress is invariably retarded owing to the lack of credit and absence of capital at the command of the cultivator. This is not the case with seeds, however, because all that the cultivator has to do is to substitute for his inferior seed that of a better variety. If by so doing he can obtain increased yields of three or four maunds of paddy per bigha, for instance, it is obvious that the economic result of the country is likely to be very great.

"The production of these specially selected varieties is not, however, an easy matter and requires the whole-time work of specially trained plant-breeders. In order to become a successful plant-breeder, a man must have had a thoroughly sound education in systematic Botany. It seems to me, therefore, that the University could very well help the work of the Agricultural Department if they could turn out a certain number of botanists. There is another aspect of the case which I should like to mention as it is one I brought forward for discussion at a recent Agricultural Conference. In India all the work of plant-breeding, seed-testing and distribution is done by the Government Agricultural Departments. This is not the case in other civilised countries. If we take America or England, for instance, we find it is true that a good deal of plant-breeding work is being carried out at Government institutions, but an equal amount of work is being conducted by private institutions or on the farms of big seed-producing firms. Further, all seeds are sold under a guarantee of purity and germinating capacity, and in fact the agricultural seed-industry has assumed very large proportions and has resulted in the employment of large numbers of trained botanists. For instance, the staff at the National Institute of Agriculture and Botany, which is mainly employed in seed-testing and in the propagation of improved varieties, employs a staff of 60 or 70 trained persons, while the staff of the Svålof Institute in Sweden, which is an organization of the same kind, employs an even larger staff. In addition, large seed-producing firms are also employing trained botanists as plant-breeders to an increasing extent.

"I think it is fairly obvious that before very long there will be a tendency towards the development of an agricultural seed-industry in India, and in order to meet the demand that is likely to arise, it will be necessary to give training in Botany.

#### Bacteriology.

"So far as agriculture is concerned, the study of bacteriology is still comparatively recent. More evidence is accumulating year by year, however, which tends to indicate that the fertility of the soil is wrapped

up to a very considerable extent with the bacterial flora, and most Agricultural Departments are starting sub-sections on this branch of science. The trouble is at present that there are no bacteriologists available and practically no means of training students. There is, therefore, likely to be a demand for bacteriologists from the Agricultural Department in the future quite apart from such demands as may arise from the Public Health Department.—G. EVANS, C.I.E., Director of Agriculture, Bengal."

71. The establishment of a University Department of Botany at Dacca might be pressed on other grounds, especially in view of the fact that teaching in Botany is given at Jagannath Intermediate College, but those grounds lie outside our reference.

We urge the establishment of the department for the reasons given by Mr. Evans, because we believe that, as in the case of tanning, the training of experts will lead to the creation of an industry and will provide employment for intelligent young men of the middle classes, profitable to themselves and to the province.

72. The training of a botanist involves the knowledge of some other sciences and the University could easily provide a course in chemistry, physics and botany. But such a course would not necessarily be a vocational course, without the post-graduate training in seed-growing and plant-breeding, which could only be given economically by the Department of Agriculture.

We desire to make it plain that while the Department of Agriculture could not without excessive cost give the preliminary training in botany and the ancillary sciences necessary for the production of specialists of this kind, the University could not, without similar excessive expense, give the post-graduate training necessary in seed-growing or plant-breeding. The fact that there is a very efficient Government Agricultural Research Station within about 2 miles of the University makes it possible for the Government authorities and the University authorities to keep easily in touch with one another. Once the botanical laboratory was established,\* the co-operation suggested by the Bengal Retrenchment Committee between the University and the Agricultural Department might be extended to subjects other than plant-breeding and seed-growing. There are many problems of physiological botany and plant pathology (including Mycology) of great industrial importance in which the co-operation of physicists, chemists and botanists would be fruitful.

73. The provision of a University department of Botany could be made with a comparatively small expenditure. The land is available. The Government Nursery would easily provide the necessary garden. A part of the buildings now utilised by the Dacca Intermediate College which are (at a date not fixed) to be handed over to the University might be adopted for the purpose of the Botanical Laboratory; possibly certain rooms in the North Block of the Court-house might be adopted for this purpose, although the rooms are placed with their longitudinal axis north and south instead of east and west, the arrangement which provides a maximum of window accommodation for microscope work. Dr. G. P. Hector, of the Bengal Department of Agriculture, whom we have

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\* On the area assigned to the University.

consulted, estimates the cost of a laboratory for 30 students and of fitting and equipment at Rs. 55,000. (See Appendix XV, pages 105-106 below). He has very kindly supplied us with rough plans which will be forwarded to Government. The recurring expenditure is not calculated in the Appendix. We estimate it as follows :—

		Per ensem. Rs.	Per Annum. Rs.
One Professor	...	1,000	12,000
„ Reader	...	£00	7,200
„ Assistant Lecturer	...	200	2,400
Menials, materials and library	...	...	3,400

For teaching purposes and library it would be most convenient to have the laboratory erected in the compound which includes the physics and chemistry laboratories.

74. It will be seen that both the University Agricultural Education Committee and Mr. Evans have laid stress on the teaching of elementary bacteriology for agriculturists ; and this subject is also necessary for the teaching of tanning. (See paragraph 62.) It has been suggested to us that such a department might also be utilised for the purpose of giving short courses to Public Health Officers in Eastern Bengal. We strongly urge the establishment of a small bacteriological department on the scale suggested by the University Agricultural Education Committee. (See paragraph 69 above ; also see Appendix XVI, page 107.)

We have to express our thanks to Lient. Col. J. D. Megaw, I.M.S., Director of the Calcutta Schools of Tropical Medicine, for kindly furnishing the estimates for the equipment of a bacteriological laboratory set out in Appendix XVI.

The recurring expenditure is not calculated in the Appendix.

We think that the services of a Lecturer in Bacteriology to take charge of this sub-department could hardly be obtained for less than from Rs. 300 to Rs. 400. The salary of a Demonstrator would be about Rs. 200. This makes the salary bill Rs. 7,200 (exclusive of Provident Fund). The total annual cost, including cost of menials, gas and water and chemicals, etc., would probably amount to Rs. 10,000.

#### Commerce.

75. The University has set up at relatively small cost a Department of Commerce which has been organised in co-relation with the Department of Economics. Some of the recommendations made in our *Interim Report* in regard to this department have already been adopted by the University.

We would urge the addition of a part-time Lecturer in Statistics, of a part-time Lecturer in Economics, of a part-time Lecturer in Commercial Correspondence and of a shorthand and typewriting instructor whose services should be available for students wishing to learn shorthand and typewriting in addition to the subjects of their University course. The estimates submitted by the sub-committee in commerce are printed in Appendix XVII (page 108 below).

76. We also suggest that a Research studentship of Rs. 100 a month should be established to carry on investigations on the organisation of the jute and hide trades of Eastern Bengal.

**Medicine.**

77. The question of medical education of a University standard is obviously one of the greatest importance, but Government has prescribed certain limitations in our reference which have made it impossible for the present to put forward proposals on this subject which we could regard as practicable.

The passage in the Resolution of Government relating to medicine reads as follows:—

“There remains the question of providing a suitable course of engineering and medical education in connection with the University of Dacca. The development of these departments is essential for the complete organisation of the University, but, owing to the heavy cost which it will entail, it is doubtful whether much can be done in this direction now . . . . . The provision of higher medical training is a matter of greater difficulty. There is of course the Medical School in Dacca which may be improved, but Government has at present no intention of raising it to a higher status. Any scheme for the establishment of a Medical College in connection with the University will, therefore, have to be prepared independently of the existing institution.”

78. We appointed a Medical Sub-Committee whose report is printed as Appendix XVIII, pages 109-110 below. After consideration of this report, we think that it would be impracticable to proceed with the establishment of a Medical College in Dacca distinct from the Dacca Medical School in view of the cost involved, apart from other considerations. We have been precluded by our reference from considering the question of the conversion of the Dacca Medical School into a University institution. But we hope that when more medical schools have been established the question of the conversion of the Dacca Medical School into a University institution may be considered by Government. We desire to add that while we have accepted the rough estimates of the Medical Sub-Committee generally, we have not examined them in detail.

**Supplementary University Education for persons in actual employment.**

79. In other countries, persons who have had a preliminary training in technical education and who then actually earn their livelihood by following it are often provided, by means of evening courses or otherwise, with the means of improving their theoretical knowledge. We recommend that arrangements should be made, if possible, to provide such supplementary instruction in the University as would enable persons who after completing the mechanical course proposed above, have engaged in some trade or profession, to become qualified as electrical or mechanical engineers; we also recommend that similar arrangements for further studies might be made for students who have pursued other vocational courses.

## CHAPTER VI.

## Summary.

80. We submit below a summary of the estimated capital and recurring expenditure required to carry out our recommendations:—

## Summary of Estimates.

Stages.	Items.	Capital expenditure.	Recurring expenditure (in the first year).
		Rs.	Rs.
Schools ...	(a) Central Workshop including a Carpentry shop, a Fitter's shop and a Sheet-Metal shop (excluding cost of land) [Appendix II].	50,305	31,690
	(b) Land for Central Workshop (minimum).	20,660	...
	(c) Laboratory for Dacca Collegiate School [Appendix V].	23,000	5,198
	(d) Commercial education in two schools	200	900
Intermediate Colleges.	(a) Workshop for Dacca Intermediate College [Appendix VII].	66,950	15,576
	(i) Course in oils, fats and soaps at Jagannath Intermediate College [see Appendix VI A].	3,000	3,240
	(c) Commerce Department at Jagannath Intermediate College [Appendix VIII].	250	6,000
Dacca Engineering School.	Non-University Course in Mechanical and Electrical Engineering [Appendix IX].	46,625	10,262
University	(a) Civil, Mechanical and Electrical Engineering [Appendix X]—		
	(1) Cost at the University (exclusive of provision of increased laboratory accommodation (see Report, paragraph 47).	2,000	8,700
	(2) Cost at the Engineering School	90,500	75,620

Stages.	Items.	Capital expenditure.	Recurring expenditure (in the first year).
		Rs.	Rs.
University	(b) Electro-technics [Appendices XI and XII]—		
	(i) If scheme is undertaken by the University and the Engineering School jointly on the supposition that the School is providing also a non-University course in Mechanical and Electrical Engineering—		
	(1) Cost at the University and the Dacca Electric Supply Company's Power-house.	15,000 (at the University).	14,400 (increasing to 21,000)
	(2) Cost at the Engineering School	...	5,180
	(ii) If the scheme is undertaken by the University alone.	40,000 (exclusive of cost of erection of Engineering laboratory.	17,400 (increasing to 25,800)
	(c) Chemical Technology and Chemistry of oils, fats and soaps [Appendix XIII].	1,32,000	29,000
	(d) Tanning Department [Appendix XIV].	1,66,185 (exclusive of lands which could be provided free).	34,500 (i.e., 53,500 less receipts 19,000)
	(e) Botanical Laboratory [Appendix XV]—		
	(1) Buildings, fittings and equipment.	1,00,000	...
	(2) Staff, chemicals and menials ...	...	23,500
	(3) Library (say) ...	15,000	1,500
	(f) Bacteriological Laboratory [Appendix XVI]—		
	(1) Buildings, fittings and equipment.	35,500	...
	(2) Staff, chemicals and menials ...	...	10,000
	(3) Library (say) ...	8,000	800
	(g) Commercial Education [Appendix XVII].	5,500	8,640



81. In conclusion we desire to record our high appreciation of the great services rendered to the Committee by our Secretary, Dr. Nalini Mohan Basu.

P. J. HARTOG, *Chairman.*

* A. N. MOBERLY	...	} Members of the original Committee.
† L. M. CHATTERJEE	...	
† S. N. BHADRA	...	
* C. J. HENDERSON	...	
* A. N. SEN	...	
R. S. FINLOW	...	
J. C. GHOSH	...	
* W. A. JENKINS	...	
N. C. SEN GUPTA	...	
† D. C. ROY	...	
† S. C. SEN	...	
K. NAZIMUDDIN	...	
K. M. AZAM	...	
T. AHMED	...	
* M. P. WEST	...	
P. K. SEN	...	} co-opted for the considera- tion of medical education.
U. N. SEN	...	
M. M. BANERJEE	...	} co-opted for the considera- tion of commercial educa- tion.
M. MACKELVIE	...	
S. K. DAS GUPTA	...	} co-opted for the considera- tion of Manual and Voca- tional training at the School and Intermediate College stages.
S. K. MUKERJEE	...	
P. K. BOSE	...	} co-opted for the considera- tion of Engineering education.
W. J. KERR	...	
* S. RAI CHAUDHURI	...	
J. A. STEIN	...	
L. M. DICKINS	...	

N. M. BASU,

*Secretary.*

*December, 1923.*

\* Signed subject to Dissentient Note A.

† Signed subject to Dissentient Note B.

Signed subject to Dissentient Notes B & C.



**Dissentient Note A.**

We beg to dissent from the recommendations of the Committee as far as they relate to the proposal contained in paragraph 16 of the Interim Report (*i. e.*, to establish a Mechanical Course at the Dacca Intermediate College). The decision of the Committee in favour of that proposal was far from unanimous.

We think the proposal has the following objectionable features which make it unsuitable for adoption :—

1. The course seems unnecessary since the Dacca School of Engineering authorities are able and willing to provide courses in all Engineering subjects (and of any required standard) to suit the needs of Dacca and district; expensive and useless competition between two Government Institutions in the same district would therefore be involved.

2. The Main Committee have also unanimously recommended a Mechanical and Electrical Engineering Course for the Dacca School of Engineering and it seems rather a dissipation of money and energy to also establish a weak course at the Intermediate College.

3. The estimated cost of the proposed Intermediate College Mechanical scheme is prohibitive, being reckoned at Rs. 66,950 Capital Expenditure and Rs. 15,576 Recurring Expenditure as compared with Rs. 46,625 Capital Expenditure and Rs. 10,262 Recurring Expenditure required for the full Mechanical and Electrical Engineering Course proposed for the Dacca School of Engineering.

4. The course proposed for the Intermediate College is admittedly not designed to have any professional value, but would only provide men suitable for finishing their training in some higher or fuller professional or University Course should these be available. Such men would be more appropriately drawn from the passed students of the Dacca School of Engineering.

We would point out that Government have quite recently gone to considerable expense in improving and raising the status of the Dacca School of Engineering. It has now been placed on a self-contained basis and has no connection with the Dacca College; it has been placed under a Governing Body of its own; it has been removed to much finer and larger buildings and workshops which afford room for expansion for years to come; its staff has been greatly increased and strengthened and the whole capacity of the institution has been widened.

In view of these facts we therefore think that Government should recognise the appropriateness of assigning to the Dacca School of Engineering the task and function of developing any educational courses in Engineering for Dacca and district.

It has been used as an argument in favour of the Intermediate College Mechanical Course that the Dacca School of Engineering authorities have twice recently rejected a scheme to take part in a proposed Mechanical Engineering Course for the Intermediate College and in consequence they have been accused of a "dog in the manger" attitude in that connection. Though the fact of the rejection of the scheme is true, such an accusation could not be justly put forward by anyone who understood the position. Had the Engineering School authorities consented to take part in a Mechanical and Electrical Engineering Course to be run by an Intermediate College, how would it have been possible for them to have asked

Government to agree to a second Mechanical and Electrical Engineering Course at the Engineering School? Government would never have listened to such a proposal and hence the Engineering School authorities would, by their own action, have for ever closed the door to the natural development of the Engineering School in these branches. Such a situation was unthinkable and the Engineering School authorities had therefore (in self-preservation) no alternative but to reject the Intermediate College scheme. They are ready and willing to collaborate, where possible, in any scheme of Engineering Education which will not lower the Engineering School status or take away from its proper functions, provided that its present constitution is not affected by such collaboration. They have in fact already agreed to collaborate with the Dacca University authorities in connection with a proposed Electro-technics Course and there seems no reason why such collaboration should not be extended to any future Engineering or Technological Degree Courses to be proposed by the University.

It has also been argued in this connection that the Intermediate College scheme is intended to be more of a manual training scheme than a Mechanical Engineering Course. A glance at the extensive varied workshops proposed and subject of study effectively disposes of that argument and reveals its true nature as that of a short and incomplete Mechanical Engineering Course.

We therefore think it would be better for the Intermediate College authorities to choose some other Vocational Course for adoption rather than Mechanical Engineering and treat it as a true Vocational Course leading to employment; overlapping and unnecessary competition with existing Government Institutions would thereby be avoided.

A. N. MOBERLY.  
CHAS. J. HENDERSON.  
W. A. JENKINS.  
M. P. WEST.  
A. N. SEN.  
S. RAI CHAUDHURI.

#### **Dissentient Note B.**

I am in general agreement with the report. On one important point, however, I feel I must submit my views.

It will be seen from paragraph 10 of the report that only two vocational courses, namely, one in the Chemistry of Oils and Fats and another in Mechanical Science, have been recommended for the Intermediate stage. The other two Courses mentioned, namely, one in Dyeing and another in Commerce, have been already started under the Dacca Board. Among other possible new courses at the Intermediate stage, one in Agriculture would seem to be suitable for Dacca on account of the large demonstration farm which exists here. I submitted to the Committee a draft scheme for such a course leading up to the creation

of a class of gentlemen farmers in Bengal. But the Committee did not get an opportunity of considering it. Indeed, Agriculture as a possible subject does not occur in the report at all.

Further, speaking generally, I wish to submit that, though it is very desirable that higher technological vocational courses should be provided at the University, it is at the Intermediate stage that, at the present moment, vocational courses are most required and can be introduced with advantage. We are faced with the problem of middle class unemployment. The question is not that of providing higher employment to a few experts, even assuming that the University trained men will be accepted as "experts" by business houses. The question is how to provide a living, even a modest one to start with, for the rank and file. At the end of the Intermediate stage students are still at an age when they can afford to make a modest beginning, when in mind and body they are more adaptable and, perhaps, have more hope and faith.

The report has raised the question—but has not discussed it—whether, at the end of the Intermediate stage, students who have studied a vocational course will be qualified for earning a living. It is a vital point. I submit that in the circumstances in which Bengal is placed they *will* be qualified so far as a preliminary knowledge of the subject and equipment for self-teaching can qualify them. Industrial education and training are not organised in Bengal as they are in the West. Business firms have not interested themselves in the subject. A glance at the schedules appended to the report (Table 1 and Table 2) will show that there are many industries in an inchoate condition often in the hands of ignorant and untrained men. Such men, though they have some practical knowledge, are incapable of developing their industries properly. Now take the Intermediate Course in Dyeing, which has now been taught for two years at the Jagannath Intermediate College under the Dacca Board. The Course includes "practical" English, Vernacular, Mathematics, Physics, Chemistry (organic and inorganic), Principles of Dyeing, together with a systematic laboratory training (tested by examination) in the actual work of dyeing. It just gives the necessary basis of general education, a good knowledge of Chemistry which is indispensable, a grounding in the principles of dyeing based on this knowledge of Chemistry and some practice in the dyeing of cotton, silk and wool. The syllabus in dyeing is almost on a level with that prescribed for its examinations by the City and Guilds of London Institute and our passed students have sat for and passed with credit an examination of the Institute held in India. Now are we to suppose that students who have studied the Course will not be more successful than those who have set up business in dyeing and cleaning at so many places in Calcutta and who are evidently getting on? Will not they—when they have become better known—be in request at the Cotton Mills? For a successful career in business, honesty, perseverance, ambition and tact are necessary. But they are necessary for the highly trained expert as well. My point is that for a modest beginning the knowledge and training provided even at the Intermediate Colleges are useful, supplemented by the further discoveries and correctives that can only come from actual work.

But were it not better to give the training in a Dyeing School pure and simple, a training from which the general subjects were excluded and in which the range of practical work was extended? Yes, and by all means let us have such a school. But the school would be soon filled and

the better class of students standing at the threshold of the Intermediate Course would not wish to forego the chance of proceeding to the University. This, perhaps, is not good, but there it is, as we all know, and it must be recognised, as the Sadler Commission has recognised it. Nor is it so bad at a time when Vocational teaching is still at an experimental stage. If the possibility of proceeding to the University is kept open at the beginning, it will prevent a glut in the market and help towards a final re-adjustment, when, with the development of the industries, a many-sided purely Vocational education may be organised.

L. M. CHATTERJEE.

The 7th January, 1924.

I fully endorse the above and sign the report subject to this note.

SATYENDRA NATH BHADRA.

The 7th January, 1924.

I fully endorse the above views and sign the report subject to the note.

DHIRENDRA CHANDRA ROY.

The 9th January, 1924.

I fully endorse the above and it has been mentioned in my additional note.

SATIS CHARAN SEN.

The 9th January, 1924.

#### **Dissentient Note C.**

I am in general agreement with the report, but I should like to submit my views with respect to the following point :—

There was a good deal of discussion regarding the proposed Mechanical Course in the Dacca Intermediate College (dealt with in page 8, paragraph 32 of the present report), and the majority carried the proposal which was embodied in paragraphs 16 and 17 of the *Interim Report*, and they run as follows :—

“16. We further propose that there should be a Mechanical Course at the Dacca Intermediate College in accordance with the recommendations of the Sub-Committee. There is one point to which we should draw special attention. The workshops for fitting, for smithy and for foundry work are each designed to accommodate 20 students at a time, and we do not think it would be economical to provide workshops of smaller dimensions. But with workshops of this size, taking into account the timetable of the Intermediate College, it seems probable that each of the workshops would not be fully utilised for the whole of each working day. If each student were required to work for two periods of three hours, and if we take six hours as the length of the working day, the three workshops, if used for six days in the week to their full capacity, would provide instruction for 360 students. On the other hand, it is anticipated that the Dacca Intermediate College will have only 240 Science students, and the Principal of the College estimates that possibly not more than 120 might take the Mechanical Course. We suggest that the workshops

might therefore be utilised not only by students of the Dacca Intermediate College but also by those of the Jagannath Intermediate College and the other Intermediate Colleges which it is proposed to establish at Dacca. They might also be utilised by University students if University Courses are established in Civil, Mechanical and Electrical Engineering, as we hope will be the case before long.

"17. We recommend that arrangements should be made, if possible, to provide such supplementary instruction in the University as would enable persons who, after completing the Mechanical Course proposed above, have engaged in some trade or profession to become qualified as Electrical or Mechanical Engineers; we also recommend that similar arrangements for further studies might be made for students who have pursued other Vocational Courses."

The above paragraph 17 does not find a place in the present report and paragraph 32 of the present report differs a little from paragraph 16 of the Interim Report. The dissentients objected to the proposal—some on the ground of expense and some on other grounds. In connection with this I gave a note on 11th September, 1922, which was incorporated in page 33 of the Interim Report and will speak for itself.

"In the Resolution appointing the present Committee it has been observed that the 'B' course and 'C' course classes found in High Schools were not successful and the chief reason given is that any course which did not lead to an University career was looked upon with disfavour. The feeling continues very much the same with people who want to give their children a higher training and not make them ordinary fitters or ordinary mechanics. The Sub-Committee on Manual and Industrial Training for School-boys recommended the establishment of a central workshop and proposed to give boys training in carpentry, fitters' work or sheet metal work. Besides these, a fourth suggestion has been made, and a scheme has been submitted for opening weaving classes in connection with ordinary High Schools and Intermediate Colleges. This scheme should be introduced without delay."

The Sub-Committee on Science Teaching in relation to Technical Education in Secondary Schools and Intermediate Colleges recommended, among other things, the establishment of a workshop in connection with the Dacca Intermediate College, to give students of Intermediate Colleges training in smithy, foundry work and work in an advanced fitters' shop, to carry on the work begun in the High Schools and expressed the opinion that boys with the above training would be admirably fitted for higher Engineering or technological education in University.

"Objection was raised to the above by some of the members of the Committee, some of whom are particularly interested in the Dacca School of Engineering. Their objection appeared to be two-fold—(1) on the question of principle, (2) on the question of cost.

"As to the first, the objectors are chiefly those members who are closely connected with the Engineering School. But it was admitted that boys with the above training would be much better fitted for higher Engineering Courses—exactly the object suggested by the Sub-Committee. Further, Jagannath Intermediate College has opened two vocational courses and at the Dacca Intermediate College this would be the only course of the kind, and the suggestion has also been made for continuation classes at the University for boys who would not go beyond the Intermediate stage.

"The Engineering School course does not lead up to the University. If the Dacca Engineering School would come under the Intermediate Board, the difficulty might be solved in one way, or, if it come under the University, the difficulty might be solved in another way. The Engineering School authorities strenuously oppose both the suggestions.

"As to the second point—question of cost—we do not think that considering the usefulness cost is too high. Besides, this very workshop might be expanded later and utilised for University purposes. The Engineering School authorities refused to allow boys of the Intermediate Colleges to take their training in the Engineering School workshop. If this had been allowed, the question of alleged excessive cost might be solved easily. This attitude of the Engineering School authorities does not seem to be fair. They oppose on the ground of cost, while they deny the facilities that they can easily afford for diminishing the cost.

"The opening of non-university Mechanical and Electrical Course at the Dacca School of Engineering does not go far enough. Recently we find in the proceedings of the Imperial Legislative Assembly on the 6th September last, in reply to Mr. P. L. Misra, Mr. James said that an officer had been placed on special duty to go into the whole question of the training of Indians for both superior and subordinate grades of all departments of Indian Railways. But he said that Government did not propose to start a separate Railway College but wanted to make use of existing institutions. It is therefore likely that there will be good opening for a number of boys who take up this course. This strengthens the need of the opening of a higher Mechanical, Electrical and Engineering Course in the Dacca University, and the University Course is impossible without a basis at the High School and Intermediate stages."

In addition to the above I beg further to say that, considering the present frame of mind of our people, parents and guardians of boys, and even the boys themselves, prefer a course of studies that leads up to a University career and the fact cannot be denied that a large number of them fail to reach that stage—some for want of proper means and some for failure at the examination. As matters stand at present, their number is not a few and for which our suggestion was that there might be continuation classes, if possible, to benefit them for some small industrial pursuits in which they might utilise their training.

By way of illustration I may mention that here, in Dacca, we find many boys of the Bhadrak class have taken to manufacturing buttons, and we also find in some places that people are running small industries, like smithy, foundry, grinding, electroplating, etc., etc. With a little knowledge of the suggested courses a boy would be pre-eminently fit for such industries and even with a small capital they would be in a position to run a small factory of their own and other people may also requisition their services for such like small concerns. Besides, I think the course suggested will keep up a continuity of the proposed manual training that has been suggested for the High School boys.

I have seen the note given by Mr. L. M. Chatterjee. I fully endorse the views expressed by him and I sign the report subject to this note of mine.

SATIS CHARAN SEN.

*The 10th January, 1924.*



## APPENDIX I.

No. 1331 Edn., dated Calcutta, the 6th July 1922.

Resolution by—The Government of Bengal, Ministry of Education.

The question of the introduction of technical and vocational education in the schools and colleges of this province has for some time engaged the earnest attention of the Government of Bengal in the Ministry of Education. The poverty of the middle classes and the conditions of the modern society at the present day have made the subject a matter of special importance. It is realised that the purely literary education, which has so long been imparted, no longer offers the chance of a decent livelihood to the youths of this country and the demand for a system which will hold out better prospects has in consequence grown more and more insistent.

2 The question has not altogether been neglected in the past. Various attempts have been made to counteract the excessive bias in favour of the literary studies with which the present system is over-weighted, but they have not met with any conspicuous success. In the year 1902 agricultural classes were opened in several zilla schools as an experimental measure, but they had to be closed before long owing to a lack of necessary support. At about the same time a scheme, commonly known as the "bifurcation of studies," was evolved with a view to prepare students not only for an University career but also for all forms of "practical, industrial and commercial pursuits." According to this scheme, the general subjects taught in the first two classes of a high school, which conformed to the syllabus laid down for the Matriculation Examination, were called the "A" Course; the special subjects which led to the Apprentice Department of the Civil Engineering College or the Overseer Department were termed the "B" Course, while the Commercial and Industrial subjects formed the "C" Course. The "C" classes, of which one of the special features was the grant of a certificate on the result of an examination which was considered as equivalent, for the purposes of employment, to the Matriculation Certificate of the Calcutta University, were started in 7 schools, but, in spite of the special facility thus offered, they were poorly attended and very soon ceased to exist. The same fate very nearly overtook the "B" classes also, but the course hitherto followed has recently been revised and the effect is being watched. The latest and the most recent attempt in the same direction is the initiation in several schools of manual training classes, the main object of which is to teach wood work. These are in an experimental stage. The failure of all these efforts to create a taste for vocational education has been due to the fact that the Matriculation Examination has so far dominated the secondary education system and any course which did not lead to an University career was looked upon with disfavour. It is believed, however, that public opinion has of late undergone a change in this respect, and the necessity for reform is now realised. The Government of Bengal in the Ministry of Education consider, therefore, that the time has come to adopt a policy more suited to the altered conditions. They have accordingly had for some time under consideration certain schemes which, when fully developed, they desire to introduce in the educational institutions of Dacca in the first instance, and, if successful, to extend to other parts of the province.

3. The schemes are intended to meet the requirements of the secondary schools, the intermediate colleges and the Dacca University. So far as the first are concerned, it is recognised that all that can be attempted is to give a bias towards practical education, and it is, therefore, intended that while the training of the hand and eye will be the main object to be kept in view, advantage will be taken of the course followed in the manual training classes to teach a boy a definite craft which is likely to prove useful to him in after life, whether he takes up an University career or not. In order to achieve this object, it is proposed to establish one or more central workshops in Dacca which will be available for the use of all the secondary schools in the town, and where systematic training will be given in carpentry, smithy, card-board making and other suitable crafts. The necessary number, location, equipment, staff and control of these workshops are questions which will require a careful consideration.

4. The case with the Intermediate Colleges and the University is different, and there is no reason why a definite vocational course should not be introduced in these institutions. In framing, however, a scheme for them, the fact that an University degree cannot be granted without adequate culture will be kept in view and the curriculum so devised that the needs of both the cultural and the vocational sides are attended to. Thus, to give one illustration, it is proposed that, for a commercial degree the course adopted for the intermediate stage will include, on the cultural side, English, the vernacular and one or two other subjects such as Mathematics or Geography and, on the vocational, a practical training in précis and letter-writing, accounts, type-writing and shorthand in English and Bengali, while in the post intermediate stage, the combination prescribed will, on the one hand, be a course of higher studies in English and the vernacular and one or two subjects from an optional group, e.g., Political Economy, Principles of Banking, Mathematics, Commercial Geography, etc., and, on the other, higher Accountancy, Principles and Practice of auditing, practical training in banking in one group and suitable subjects concerning Commerce in an alternative group. Similarly, arrangements will be made for the provision of other suitable literary groups in combination with such subjects as Dyeing, Tinctorial Chemistry, Agriculture, Tanning, sheet metal industry for the manufacture of small articles and the like, to enable students to follow a definite course from the Intermediate up to the highest stage. In making the selection preference will be given to subjects for which there is likely to be an opening for trained youths either in undertakings with a small capital or as employees in well-established concerns.

For students, however, who are unwilling or unable to take advantage of the full course, it is possible that, with some modification in the cultural curriculum, a course of training may be devised which will be shorter in duration, and, at the same time, lead to some definite remunerative career. The possibility of introducing photography, analytical chemistry, the manufacture of scientific instruments and similar subjects will in this connection be borne in mind.

5. There remains the question of providing a suitable course of Engineering and Medical Education in connection with the University of Dacca. The development of these departments is essential for the complete organisation of the University, but, owing to the heavy cost which it will entail, it is doubtful whether much can be done in this direction now. There is, however, the possibility of expanding the Dacca Engineering School so as to provide not only for a degree course, but also for a training in such subjects as railway, mechanical and electrical engineering and this question will be taken into consideration. The provision of higher medical training is a matter of greater difficulty. There is of course the Medical School in Dacca which may be improved, but Government has at present no intention of raising it to a higher status. Any scheme for the establishment of a Medical College in connection with the University will, therefore, have to be prepared independently of the existing institution.

6. The proposals, of which an outline has been given in the previous paragraphs are of a tentative nature, and will require a careful and detailed examination before they can be put into operation. In order that this may be done, and before they decide upon a definite plan of action, Government feel that it will be desirable to consult the educational experts and such representatives of the people as are competent to offer advice and suggestions in the matter. They have accordingly decided to appoint a Committee which will be constituted as follows :—

1. Vice-Chancellor, Dacca University ... *President.*

*Members.*

- |  |     |   |
|--|-----|---|
| 2. Commissioner of the Dacca Division.                                   |     |   |
| 3. Principal of the Dacca Intermediate College.                          |     |   |
| 4. Chairman of the Board of Intermediate and Secondary Education, Dacca. |     |   |
| 5. Principal of the Dacca Jagannath Intermediate College.                |     |   |
| 6. Principal of the Dacca Assanullah School of Engineering.              |     |   |
| 7. Vice-Principal, Assanullah School of Engineering.                     |     |   |
| 8. Director of the Department of Agriculture.                            |     |   |
| 9. Professor J. C. Ghosh, D.Sc.  | ... | } Representatives of the<br>Dacca University. |
| 10. " W. A. Jenkins, M.Sc.   | ... |   |
| 11. Dr Naresh Chandra Sen Gupta  | ... |   |

- |  |          |  |
|--|----------|--|
| 12. Babu Dharendra Chandra Roy, Vice-Chairman, Dacca Municipality.   | ...      | } Representatives of the Dacca People's Association. |
| 13. Babu Satia Charan Sen, B.L.*   | ...      |  |
| 14. Mr. K. Nazimuddin, Bar-at-Law, Chairman of the Dacca Municipality.   | Chairman | } Representatives of the Muhammadan Community.       |
| 15. Khan Bahadur K. M. Azam*   | ...      |  |
| 16. Headmaster, Dacca Collegiate School.   |          |  |
| 17. Principal, Dacca Training College.   |          |  |
| 18. Babu Prasanna Kumar Sen, Headmaster, Pogose High School.   |          |  |
| 19. „ Upendra Nath Sen, Headmaster, Navakumar Institution.   |          |  |
| 20. Babu Monmohan Banerjee, Headmaster, E. B. Institution.   |          |  |
| ° Mr. Nalini Mohan Bose, M.Sc., Reader in Mathematics in the Dacca University, will act as Secretary to the Committee. |          |  |

The Committee will have the power to co-opt other members for the consideration of any special question and to appoint sub-committees from among themselves to facilitate their deliberations. They are also authorised to examine witnesses and take such other steps as they deem to be necessary for the proper conduct of their enquiry.

7. The Government of Bengal in the Ministry of Education trust that the Committee will make a detailed examination of the schemes indicated above and such others as may come within their cognizance, decide upon their suitability having due regard to the existing economic conditions of the province, prepare suitable curricula, advise as to the qualification of the teachers, investigate the question of adequate openings for trained students, frame an estimate of cost, make any other suggestions which they think to be relevant, and submit, as soon as possible, a comprehensive and co-ordinated scheme of technical and vocational education to which effect may be given, in whole or in part, at an early date.

ORDER.—Ordered that this resolution be published in the *Calcutta Gazette* and that copies of it be forwarded to the Director of Public Instruction, Bengal, and the members of the Committee.

\* These names were incorrectly printed in the original resolution but were corrected subsequently in the *Gazette*.

## APPENDIX II.

## Questionnaire and Summary of Replies.

## Questionnaire.

Dated Dacca, the 7th September, 1922.

From—N. M. BASU, Esq., M. Sc., Secretary, Dacca Technical and Vocational Education Committee,

To—

DEAR SIR,

I AM directed to inform you that the Hon'ble Minister for Education has appointed a Committee to report to him on schemes of Technical and Vocational Education of all grades in the Dacca area and its neighbourhood,<sup>2</sup> and I am to ask if you would be good enough to give the Committee your assistance by supplying them with information and giving them your opinions and suggestions in reply to the Questionnaire enclosed. As you will see, the Questionnaire covers a wide field and replies are only expected from any single correspondent on the matters with which he is specially acquainted or in which he is specially interested.

You are particularly requested to return the form to the undersigned so as to reach him, if possible, by 30th September 1922, and, in any case, not later than 15th October 1922. Will you kindly write the word *Questionnaire* outside the envelope?

\* The relevant Resolution of Government (No. 1331 Edn., dated 6th July, 1922, was issued in Supplement No. 28 to the *Calcutta Gazette* of July 12, 1922.

A 1

## Dacca Technical and Vocational Education Committee.

## QUESTIONNAIRE.

Issue No. ....

## PART A.

## Questions relating to Vocations already existing in Dacca.

This part deals with the existing outlets for Dacca youths for which vocational education might be provided.

Please see the list of vocations (section A2) and the blank form (A3).

1 and 2. Kindly note on the form A3, columns 1 and 2, any vocations with which you are personally intimate, for which vocational education is not, but ought, in your opinion, to be provided in Dacca and could reasonably be provided without excessive cost.

3. Please add in column 3 whether the vocation is best suited as regards pay and social status to youths whose education ends at the Primary, High School, Intermediate or University stage.

4. Please add in column 4 the initial monthly pay which a youth of average ability would ordinarily receive on first joining the vocation.

5. Please note in column 5 the monthly pay you think such a person would be receiving after five years, assuming average ability and industry.

6. Please give, if possible, in column 6 a rough estimate of the number of qualified applicants there usually are at present for any one such post as that for which the trained youth would first apply.

7. Please note in column 7 the names of any employers or employers' associations whom you suggest that the Committee should consult in framing a scheme for this vocation.

8. In case capital is required by the trained youth for starting in this vocation please note in column 8 your estimate of the minimum capital necessary.

N.B.—(1) Please add to this statement any vocations which have been omitted from the list, or any specialised sections of vocations which have been mentioned only in general, and supply detailed information in regard to each. Please insert an asterisk \* instead of a number in column 1 in respect of the details given with regard to such vocation.

N.B.—(2) Please supply on page A4 any additional information, opinions, theoretical considerations or suggestions as to lines of enquiry which you think may be useful to the Committee.

# Dacca Technical and Vocational Education Committee.

## Questionnaire.

### LIST OF INDUSTRIES.

*The following selected list of occupations followed by people of the Dacca district has been framed with the assistance of the Census Office.*

NOTE.—The list includes those occupations which were followed by the persons recorded in the census as living in the district, but in certain cases it is clear that the occupation itself must have been carried on outside the district.

GROUP No.	OCCUPATION.
2.	Ordinary cultivators.
3.	Agents, managers of landed estates (not planters), rent-collectors, etc.
4.	Farm servants.
5.	Field labourers.
6.	Tea, coffee, cinchona, rubber and indigo planters.
7.	Fruit, flower, vegetables, betel, vine, arecanut, etc., growers.
8.	Forest officers, rangers, guards.
9.	Wood-cutters, firewood, catechu, rubber, etc., collectors, and charcoal burners.
11.	Cattle and buffalo breeders and keepers.
13.	Breeders of other animals (horses, mules, camels, asses, etc.).
14.	Herdsmen, shepherds, goatherds, etc.
17.	Fishing.
25.	Cotton ginning cleaning and pressing.
26.	Cotton spinning.
27.	Cotton sizing and weaving.
28.	Jute spinning and weaving.
28A.	Jute pressing.
29.	Rope, twine and string.
35.	Silk weavers.
39.	Tanners, curriers, leather dressers and leather dyers, etc.
42.	Bone, ivory, horn, shell, etc., workers (except button).
43.	Sawyers.
44.	Carpenters, turners and joiners, etc.
45.	Basket-makers and other industries of woody material (including leaves), and thatchers and builders, working with bamboo reeds or similar materials.
46.	Forging and rolling of iron and other metals.
47.	Making arms, guns, etc.
48.	Other workers in iron and makers of implement and tools principally or exclusively of iron.
49.	Workers in brass, copper and bell-metal.
50.	Workers in other metals except precious metals (tin, zinc, lead, quick-silver etc.).
52.	Makers of glass and crystalware.
53.	Makers of glass bangles, glass beads and necklaces and glass ear-studs, etc.
55.	Potters and earthen pipe and bowl makers.
56.	Brick and tile makers.
58.	Manufacture of matches and explosive materials, fireworks.
59.	Manufacture of aerated and mineral waters and ice.
60.	Manufacture of dyes, paint and ink.
61.	Manufacture and refining of vegetable oils.
63.	Manufacture of papers, cardboard and papier maché.
64.	Soap, candles, lac, cutch, perfumes, and miscellaneous drugs.

Group No.	OCCUPATION.
65.	Rice-pounders and huskers, flour-grinders.
66.	Bakers and biscuit-makers.
67.	Grain parchers, etc.
69.	Butter, cheese, ghee makers.
71.	Makers of sugar, molasses and <i>gur</i> .
72.	Sweetmeat-makers, preparers of jam and condiments, etc.
74.	Toddy drawers.
76.	Hat, cap, turban makers.
77.	Tailors, milliners, dress-makers, darners, and embroiderers on linen.
78.	Shoe, boot and sandal makers.
79.	Other industries pertaining to dress, gloves, socks, garters, belts, buttons, umbrellas, canes, etc.
80.	Washing, cleaning, and dyeing.
81.	Barbers, hair-dressers and wig-makers.
83.	Cabinet-makers, carriage painters, etc.
84.	Upholsterers, tent-makers, etc.
85.	Lime burners, cement workers.
86.	Excavators and well sinkers.
87.	Stone-cutters and dressers.
88.	Bricklayers and masons.
89.	Builders (other than buildings made of bamboos and similar materials), decorators, painters, tilers and plumbers, etc.
90.	Persons engaged in making, assembling or repairing motor-vehicles or cycles.
91.	Carriage, cart, palki, etc., makers and wheel-wrights.
92.	Ship and boat-builders.
93.	Gas works, electric light and power.
94.	Printers and lithographers, engravers, etc.
95.	Book-binders and stitchers, envelope-makers, etc.
96.	Makers of musical instruments.
97.	Makers of watches and clocks, etc.
98.	Workers in precious stone and metals, enamellers, imitation jewellery-makers, guilders, etc.
99.	Makers of bangles or beads or necklaces of other materials than glass, and makers of spangles, rosaries and sacred thread.
100.	Toy, kite, cage, fishing-tackle, etc., makers.
101.	Persons other than actors employed in theatres and places of public entertainment.
105.	Persons (other than labourers) employed in harbours, docks, etc.
107.	Owners of inland steamers and flats and their employees, officers, engineers, khalasis and firemen.
107A.	Owners of sea-going vessels and their employees.
110.	Boat-owners, boatmen, and townmen.
112.	Labourers employed on roads and bridges.
113.	Owners, managers and employees (excluding personal servants) connected with mechanically driven vehicles.
116.	Pack, elephant, camel, mule, ass and bullock owners and drivers.
118.	Railway employees of all kinds other than coolies.
119.	Labourers employed on railway construction and maintenance, and coolies and porters employed in railway premises.
120.	Post office, telegraph and telephone service.
121.	Bank managers, money-lenders, exchange and insurance agents, etc.
122.	Brokers, commission agents, commercial travellers, ware-house owners and employees.
123.	Trade in piece-goods, wool, cotton, silk and other textiles.
123A.	Trade in jute.
124.	Trade in leather, skins, horns, etc.
125.	Trade in wood (not firewood), cork, bark, bamboo thatch, etc.

GROUP  
No.

## OCCUPATION.

126. Trade in metals, machines, knives, tools, etc.
127. Trade in potteries, bricks and tiles.
128. Trade in chemical products (drugs, dyes, paints, etc.).
129. Vendors of wine, liquors, aerated waters and ice.
130. Owners and managers of hostels, cookshops, sarais, etc., and their employees.
131. Fish dealers.
132. Grocers and sellers of vegetables, oils, salts and other condiments.
133. Sellers of milk, butter, ghee, poultry eggs, etc.
134. Sellers of sweetmeats, sugar, molasses.
135. Cardamom, betel-leaf vegetables, fruit and arecanut sellers.
136. Grains and pulse dealers.
137. Tobacco, opium, *ganja* etc., sellers.
138. Dealers in sheep, goats, pigs.
139. Dealers in hay and grass and fodder.
140. Trade in ready-made clothing and other articles of dress and the toilet, hats, umbrellas, socks, shoes, perfumes, etc.
141. Trade in furniture, carpets, curtain and beddings.
142. Trade in hardware, cooking utensils, procelain, crockery, glasswares, bottles, articles for gardening, etc.
143. Trade in building materials, other than bricks, tiles, etc.
- 143A. Dealers and hirers in carriages, carts, etc.
146. Dealers in elephants, horses, cattle, etc.
147. Dealers in firewood, charcoal, coal, cowdung, etc.
148. Dealers in precious stones, jewellery (real and imitation), clocks, optical instruments, etc.
149. Dealers in common bangles, beads, small articles, toys.
150. Publishers and booksellers, dealers in music, musical instruments.
151. Dealers in refuse matters.
169. Lawyers of all kinds, including kazis, mookteers.
170. Lawyers' clerks, petition-writers.
171. Medical practitioners of all kinds including dentists, oculists, and veterinary surgeons.
172. Midwives, vaccinators, compounders, nurses.
173. Professors and teachers of all kinds.
174. Clerks and servants connected with education.
175. Public scribes, stenographers and typists.
176. Architects, surveyors, engineers and their employees.
177. Authors, editors, journalists, artists, photographers.
178. Music composers and masters, players of all kinds of musical instruments (not military), singers, etc.
181. Cooks, water-carriers, door-keepers, watchmen and other indoor servants.
182. Private grooms, coachmen, dogboys, etc.
183. Private motor-drivers, etc.
184. Contractors, businessmen, etc., otherwise unspecified.
185. Cashiers, accountants, book-keepers, clerks, other employees in unspecified offices, etc.
186. Mechanics, otherwise unspecified.

## Dacca Technical and Vocational Education Committee.

## Questionnaire.

Issue No.

*The headings of the columns on this table are abbreviated; for full instructions as to how they should be filled in, see page A1.)*

Number on list.	Vocation.	Is the vocation suitable for youths who have completed the Primary, High School, Intermediate or University stage?	Initial monthly pay to be expected.	Monthly pay to be expected after five years.	Probable number of applicants for vacant post.	Names of persons suggested for further consultation.	If capital is needed, minimum essential.
1	2	3	4	5	6	7	8

See over.



ISSUE NO.

Additional Information, Opinions or Suggestions.

*Signature.*

Date

(If there is not room on this sheet for your statement please add such additional sheets as may be necessary with your signature.)

**Dacca Technical and Vocational Education Committee.****Questionnaire.**

ISSUE No.

**Part B.***Questions relating to vocations not existing in Dacca.*

This part deals with vocations which do not at present exist at all or scarcely at all in or near Dacca, or even in Bengal, but which in your judgment would be suitable for Dacca youths if vocational education were provided.

Vocations which would require more initial capital than can in your opinion reasonably be expected should be excluded.

Kindly see the blank form on page B3 and the selected list of vocations in section A2. This list shows the main headings of existing vocations and may help to suggest further developments or actual innovations which are possible.

1. Please note in column 1 any vocations specially known to you or specially interesting to you which conform with the requirements stated above and for which vocational training is not, but ought, in your opinion, to be provided.

2. Please note in column 2 whether the vocation is best suited as regards pay and social status to youths whose education ends at the Primary, High School, Intermediate or University stage.

3. Please add in column 3 what minimum capital would be required by any trained person attempting to start this vocation.

4. Give, if you can, in column 4 a rough estimate of the average monthly profit (not deducting interest on capital) which would be derived from the business, say, five years after the start.

5. In column 5 please note the names and addresses of any persons, institutions or associations whom the Committee could profitably consult regarding the prospects of the vocation and the preparation of schemes for training.

6. In column 6 state the reasons which lead you to think that this new vocation would be successful and why it has not been started in the past.

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**N.B.**—On page B2. on the back of B3, please give any additional facts, opinions theoretical considerations or suggestions as to lines of enquiry which may be useful to the Committee.

# **Dacca Technical and Vocational Education Committee.**

## **Questionnaire.**

ISSUE No. .

*(The headings of the columns on this table are abbreviated; for full instructions as to how they should be filled in, see page B1.)*

Vocation.	Is the vocation suitable for youths who have completed the Primary, High School, Intermediate or University stage ?	Minimum capital required for starting.	Estimated average monthly profit.	Names of persons suggested for further consultation.	Reasons why the vocation should be successful and why not started in the past.
1	2	3	4	5	6

*See over.*

Issue No.

Additional Information, Opinions or Suggestions.

Date

*Signature.*

(If there is not room on this sheet for your statement please add such additional sheets as may be necessary with your signature.)

## **SUMMARY OF REPLIES TO QUESTIONNAIRE**

### **TABLE I.**

Names.	Vocation.	Number of candidates to be expected for vacant post.	Monthly pay to be expected on appointment.	Monthly pay to be expected after five years.
Mr. F. Smith, Deputy Director of Agriculture, Manipur Farm.	1. Agriculture	...	Rs. 30	Rs. 50—100
	1. Tanners, curriers, leather dressers and leather-dyers, etc.	50	50	150
	2. Bone, ivory, horn, shell, conch shell, etc., workers (except button).	...	30	100
	3. Workers in brass, copper and bell-metal.	...	50	100
	4. Brick and tile makers	...	50	100
	5. Manufacture of matches and explosive materials, fireworks.	...	50	150
	6. Manufacture and refining of vegetable oils.	...	50	200
7. Cigar manufacture	...	...	.....	.....
Mr. B. M. Das, Superintendent, Government Research Tannery, Calcutta.	1. Tanners, curriers, leather-dressers and leather-dyers, etc.	Very few.	25—200	30—300
	2. Shoe, boot and sandal makers	Do.	25	50
Maulvi Aulad Hossain, Muktear, Maukgaonj.	1. Grinding flour from <i>sukarkand</i> potato	...	.....	.....
	2. Preparing carpets	...	.....	.....
	3. Preparing vinegar	...	.....	.....
	4. Jute spinning and weaving	...	25	50
	5. Manufacture of dyes, paint, ink	100	50	200
	6. Weaving by improved methods	50	15	50

Mr. Prafulla Chandra Banerjee, Assistant Teacher, Engineer- ing School, Dacca.	7. Manufacture of sugar ...	...	...	...	...
	8. Preparing dāl and other food-stuffs	...	...	...	...
	9. Manufacture of condensed milk	...	...	...	...
	10. Preservation of fruits ...	...	...	...	...
	11. Preparation of jams and jellies	...	...	...	...
Mr. Sachindra Chandra Chow- dhury, Bandar.	1. Tanning ...	...	...	...	...
	2. Dyeing ...	...	...	...	...
	3. Scientific instrument-making	...	...	...	...
	4. Repairing the same ...	...	...	...	...
	5. Making parts of cycles, umbrellas, hurricane lanterns.	...	...	...	...
Mr. A. Sen, Subdivisional Officer, Narainganj.	1. Button manufacturing	Great demand	10	20	20
	2. Dyeing ...	Do.	20	30	30
	3. Cotton sizing and weaving	...	10-15	25-30	25-30
Mr. H. C. Bhattacharyya, Secre- tary, Central Co-operative Bank, Mauikganj.	2. Oyster buttons	...	10-15	20-25	20-25
	3. Silkworm cultivation	...	...	...	...
	1. Manager of landed estates	...	100	250	250
	2. Trade in cotton and jute and con- nected business.	...	30	150	150
	3. Brick and tile-making	...	50	150	150
	4. Gas works, electric light and power	...	50	200	200
	5. Tailors and dress-makers	...	50	200	200
	6. Match manufacturing ...	...	...	...	...
Mr. H. C. Bhattacharyya, Secre- tary, Central Co-operative Bank, Mauikganj.	7. Porcelain and glassware manu- facture.	...	...	...	...
	8. Leather manufacture and shoe- making.	...	...	...	...

Name.	Vocation	Number of candidates to be expected for vacant post.	Monthly pay to be expected on appointment.	Monthly pay to be expected after five years.
Maulvi Naimuddin Ahmed, M.A., Dacca.	1. Cotton spinning and weaving, etc.	...	Rs. 15-20	Rs. 40-50
	2. Tanning ...	...	200-300	500
	3. Journalism ...	...	100	400
	4. Manufacture of nibs and writing ink	...	.....	.....
	5. Dentistry ...	...	.....	.....
Lal Jogendra Nath Ray Bahadur, M.L.O., 102, Sovabazar Street, Calcutta.	1. Cotton spinning	50	5-7	10-25
	2. Cotton sizing and weaving	50	7-10	20-60
	3. Jute spinning and weaving	40	5-7	10-30
	4. Rope, twine and string	50	5	10-25
	5. Sawyers ...	50	8	20-30
	6. Carpenters, etc.	...	10-15	20-80
	7. Forging, etc.	...	8-10	20-50
	8. Other workers in iron and makers of implement and tools, principally or exclusively of iron.	...	8-12	15-50
	9. Workers in brass, copper and bell-metal.	...	8-10	15-50
	10. Ordinary cultivation ...	...	.....	.....
	11. Workers in other metals except precious metals (tin, zinc, lead, quicksilver, etc.)	...	5-7	15-30
	12. Potters and earthen pipe and bowl makers.	Several	5-10	10-75
	13. Brick and tile makers ...	Do.	5-7	15-50
	14. Manufacture of dyes, paint and ink	50	5-10	15-60
	15. Manufacture and refining of vegetable oil.	50	5-10	15-60



16. Manufacture of papers, cardboard, and papier maché.	50	5-15	15-100
17. Manufacture of soap, candles, lac, perfumes and miscellaneous drugs.	50	5-15	15-200
18. Rice-pounders and huskers, flour-grinders.	50	5-7	15-40
19. Manufacture of sugar, molasses and gur.	50	5-7	20-50
20. Sweetmeat-makers, preparers of jam and condiments, etc.	50	5-7	15-30
21. Other industries pertaining to dress, gloves, socks, garters, belts, buttons, umbrellas, canes, etc.	Several	5-7	15-50
22. Ship and boat builders	Do.	5-20	15-200
1. Medical practitioners of all kinds ...	100-150	50-75	100
1. Tanners, curriers, leather-dressers and leather-dyers, etc.	...	50	100
2. Manufacture of papers, cardboard and papier maché.	Few	30	75
3. Soap, candles, lac, cutch, perfumes and miscellaneous drugs.	Do.	30	75
4. Sweetmeat-makers, preparers of jam and condiments, etc., also preserved fruits.	Do.	50	150
5. Printers, lithographers, engravers, etc.	Several	30	75
6. Indigenous medicine	...	.....	...

Khan Bahadur Khairulla,  
Pleader, Munshiganj.

Mr. Kabeer Uddin Ahmed, 7,  
Old Post Office Street,  
Calcutta.



13. Manufacture of candles	...	...	...	...
14. Manufacture of biscuits	...	...	...	...
15. Hat manufacture	...	...	...	...
16. Washing, cleaning and dyeing with the help of machines.	...	...	...	...
17. Building of boats and sea-going vessels.	...	...	...	...
18. Watch and clock manufacture	...	...	...	...
19. Enamelling	...	...	...	...
20. Mechanical toy-making	...	...	...	...
21. Cigar and cigarette manufacture	...	...	...	...
22. Manufacture of polish and laces for shoes and boots.	...	...	...	...
23. Knitting (socks, etc.)	...	...	...	...
24. Button-making of all sorts	...	...	...	...
25. Umbrella-making	...	...	...	...
26. Pottery (China-ware)	...	...	...	...
27. Manufacture of steel trunks, etc.	...	...	...	...
28. Canework	...	...	...	...
29. Carpet-making	...	...	...	...
30. Manufacture of stationery (nibs, pens, pen-holders, paper-clips, tags, etc.).	...	...	...	...
31. Printing and lithography	...	...	...	...
32. Cutlery	...	...	...	...
33. Jute pressing	...	...	...	...
1. Ordinary cultivators	...	...	...	...
2. Cultivation on modern lines	...	...	...	...
3. Pisciculture as a part of the above	...	20	...	50
4. Cotton sizing and weaving	...	...	...	...
5. Tanners, curriers, leather-dressers and leather dyeing, etc.	...	...	...	...
6. Butter, cheese and glue makers	...	50	...	100
7. Making of condensed milk	...	...	...	...
8. Fish canning	...	...	...	...

Mr. Hari Das Saha, Professor,  
Dacca Intermediate College.



8.	Basket-makers and other industries of woody material (including leaves) and thatchers and builders, working with bamboo reeds or similar materials.	...	....	....
9.	Makers of glass bangles, glass beads and necklaces and glass ear-studs, etc.	...	....	....
10.	Potters, earthen pipe makers ...	...	....	....
11.	Manufacture of matches and explosive materials, fireworks.	...	....	....
12.	Manufacture of dyes, paint and ink	...	....	....
13.	Manufacture and refining of vegetable oils.	...	....	....
14.	Soap, candles, lac, cutch, perfumes and miscellaneous drugs.	...	....	....
15.	Tailors, milliners, dressmakers, darners and embroiderers on linen	...	....	....
16.	Other industries pertaining to dress, gloves, socks, garters, belt, buttons, umbrellas, canes, etc.	...	....	....
17.	Washing, cleaning and dyeing ...	...	....	....
18.	Persons engaged in making, assembling or repairing motor vehicles or cycles.	...	....	....
19.	Printers, lithographers, engravers, etc.	...	....	....
20.	Book-binders, stitchers, envelope-makers.	...	....	....
21.	Makers of watches, clocks, etc. ...	...	....	....
22.	Telegraph and telephone service ...	...	....	....
23.	Bank managers, money-lenders, exchange and insurance agents, etc.	...	....	....
24.	Public scribes, stenographers and typists.	...	....	....

Names.	Vocation.	Number of candidates to be expected for vacant post.	Monthly pay to be expected on appointment.	Monthly pay to be expected after five years.
			Rs.	Rs.
Moulavi Asanullah, B.A., 10, Samsahab, Dacca.	1. Medical practitioners (degree course)	250	200	350
	2. Engineering College ( ditto )	20	200	350
	3. Agricultural College ( ditto )	10	100	150
	4. Tanners, curriers, leather-dressers and leather-dyers, etc.	10	50	75.
	5. Tailors, milliners, dressmakers, darners and embroiderers on linen.	5	30	45
	6. Carpenters, turners and joiners, cabinet-makers, carriage-painters, etc.	10	30	45
	7. Cotton sizing and weaving, jute spinning and weaving, silk-weavers.	...	30	45
	8. Brick-layers, masons, builders (other than buildings made of bamboos and similar materials) decorators, painters, fitters and plumbers, etc.	...	.....	.....
	9. Sellers of milk, butter, ghee, poultry, eggs.	...	20	30
	10. Mechanical and electrical engineering.	...	.....	.....
	11. Agricultural draughtsman	...	.....	.....
	12. Mechanical draughtsman	...	.....	.....
	13. Fireworks	...	.....	.....
	14. Painting and sketching	...	.....	.....
	15. Veterinary school	...	.....	.....
	16. Schools for indigenous system of medicine, especially ayurvedic, hakim or unani.	...	.....	.....
	17. Rope-making	...	.....	.....

		200-500	40-50	80-100
Mr. Govinda Chandra Bhowal, Plender, Dacca.	1. Cotton spinning ... .. 2. Cotton ginning, cleaning and pressing.	... ...	... ...	... ...
	3. Cotton sizing and weaving 4. Jute spinning and weaving 5. Jute pressing 6. Rope, twine and string 7. Tanners, curriers, leather-dressers and leather-dyers.	... ... ... ... ...	... ... ... ... ...	... ... ... ... ...
	8. Carpenters 9. Makers of glass, etc. 10. Potters and earthen pipe and bowl makers.	... ... ...	... ... ...	... ... ...
	11. Manufacture of matches 12. Manufacture of paper ..	... ...	... ...	... ...
	13. Soap, candles, lac, cutch, perfumes and miscellaneous drugs.	...	...	...
	14. Manufacture of shoe and boots 15. Architects, engineers, etc. 16. Mechanics 17. Gas works 18. Other workers in iron and makers of implements and tools, principally and exclusively of iron.	... ... ... ... ...	... ... ... ... ...	... ... ... ... ...
	19. Mechanical engineering 20. Electrical engineering	... ...	... ...	... ...
F. L. Peters, Esq., I. P., Deputy Inspector-General of Police, Dacca Range, Dacca.	1. Stenographers 2. Typists 3. Motor drivers 4. Clerks 5. Accountants	... ... ... 25 25	80 45 25 30 40	200 70 50 40 60
Mr. R. C. Bose, B.A., District Fishery Officer, Dacca.	1. Fisheries ...	A few	150	.....

Name.	Vocation.	Number of candidates to be expected for vacant post.	Monthly pay to be expected on appointment.	Monthly pay to be expected after five years.
Mr. Beni Madhab Mukhuty, Lohuath Dyeing Factory, Narayanganj.	1. Weaving ... 2. Accountancy, book-keeping and banking.	...	Rs.	Rs. 40—50 125
		...	25 75	
Mr. Hem Chandra Roy Chowdhury, Zamindar, Dhankhora, Dacca.	1. Manufacture of matches and explosive material.	...	40	100
	2. Manufacture of dyes and paints	...	75	200
	3. Carpenters, turners and joiners	Good number	30	60
	4. Cotton sizing and weaving	Many	40	60
	5. Woollen industry as is now prevalent in the Punjab.	...	.....	.....
Bird & Co	1. Tanners	...	30	.....
			Apprentice Assistant	
			75	
Nandi Brothers, Narayanganj Match Factory.	1. Manufacture of matches, explosive materials and fireworks.	30	Foreman ... 150—500	100
	2. Hat, cap and turban-making	...	.....	.....
Manager, The National Tannery Co., Ltd.	1. Tanners, curriers, etc.	A few	20—40	Workman ... 30—75
			100	Foreman ... 150
			Expert and technical manager.	Expert and technical manager. ....
2. Trade in hide, skins, curing hide for export.		...	.....	.....
	3. Shoe, boot and sandal making	...	.....	.....



**SUMMARY OF REPLIES TO QUESTIONNAIRE.**

**TABLE II.**

1	2	3	4	5	6	7
Group No.	Vocation.	Number of witnesses by whom suggested.	Edificational stage which should be completed before the vocation is taken up and the number of witnesses making such recommendations.	Number of witnesses who have reported on capital required.	Capital suggested as necessary for starting vocation.	Monthly profit to be expected after five years.
			P <sup>o</sup> H <sup>o</sup> I <sup>o</sup> U <sup>o</sup>		Rs.	Rs.
2	Ordinary cultivators ...	3	3 ...	...	20	.....
3	Agents, managers of landed estates (not planters), rent-collectors, etc.	4	1 1 3	2 1	250	.....
6	Tea, coffee, cinchona, rubber and indigo planters	1	1 1	...	200	150
7	Fruits, flower, vegetables, betel, vine, arcanaut, etc., growers.	1	...	...	.....	.....
8	Forest officers, rangers, guards	2	...	...	.....	.....
17	Fisheries	1	1 1 1	2 ...	.....	.....
26	Cotton spinning	14	10 9 4	2 3	3,000—4,000	200
25	Cotton ginning, cleaning and pressing	10	8 10 5	3 2	1,000—5,000	.....
27	Cotton sizing and weaving	16	10 13 4	2 9	1,000—5,000	100
28	Jute spinning and weaving	10	4 3 1	1 ...	50—1,000	.....
28A	Jute pressing	4	3 4 2	2 1	100—5,000	.....
29	Rope, twine and string	4	4 2 1	1 ...	750	.....
35	Silk-weavers	2	2 1	...	.....	.....
39	Tanners, curriers, leather-dressers and leather-dyers, etc.	14	6 8 10	8 5	500	.....
					1,000—5,000	.....
42	Bone, ivory, horn, shell, etc., workers (except button)	2	1 ...	1 1	500	.....
43	Sawyers	2	2 1	...	5,000	.....
44	Carpenters, turners and joiners, etc.	9	7 6	2 1	50—1,000	.....
45	Basket-makers and other industries of woody material (including leaves) and thatchers and builders, working with bamboo reeds or similar materials.	3	3 3	...	400	50
46	Forging and rolling of iron and other metals	3	1 1	...	100	.....
48	Other workers in iron and makers of implement and tools, principally or exclusively of iron.	3	2 2	1 1	200	.....

49	Workers in brass, copper and bell metal	...	3	1	1	1	...	2	200—5,000	.....
50	Workers in other metals, except precious metals (tin, zinc, lead, quicksilver, etc.)	...	4	1	1	...	...	1	500	.....
52	Makers of glass and crystal ware	...	4	1	2	3	3	...	.....	.....
53	Makers of glass bangles, glass beads and necklaces and glass ear-studs, etc.	...	3	1	2	2	2	...	.....	.....
55	Potters and earthen pipe and bowl makers	...	5	2	3	2	1	2	100—1,000	.....
56	Brick and tile makers	...	3	2	2	1	...	2	1,000—5,000	.....
58	Manufacture of matches and explosive materials, fireworks.	...	7	1	3	6	5	4	500—3,000	25—500
60	Manufacture of dyes, paint and ink	...	10	3	4	7	4	3	1,000—5,000	.....
61	Manufacture and refining of vegetable oils	...	6	1	1	6	5	2	500—10,000	.....
63	Manufacture of papers, cardboard and papier maché	...	5	1	2	4	4	1	1,000	.....
64	Soap, candles, lac, cutch, perfumes and miscellaneous drugs.	...	7	2	3	6	5	1	1,000	.....
65	Rice-pounders and huskers, flour-grinders	...	1	1	1	...	...	1	100	.....
66	Bakers and biscuit-makers	...	3	1	...	2	2	1	20	.....
69	Butter, cheese and ghee making	...	1	1	1	1	...	1	750	.....
71	Makers of sugar, molasses and gur	...	1	1	1	...	...	1	200	.....
72	Sweetmeat-makers, preparers of jams and condiments, etc.	...	2	1	2	1	1	2	200—500	.....
76	Hat, cap and turban makers	...	3	...	1	1	...	1	300	10
77	Tailors, milliners, dressmakers, darners and embroiders on linen.	...	5	4	5	1	...	3	10—500	.....
78	Shoe, boot and sandal makers	...	4	3	3	4	3	1	500—3,000	500
79	Other industries pertaining to dress, gloves, socks, garters, belts, buttons, umbrellas, canes, etc.	...	10	4	1	1	...	3	5—25	.....
80	Washing, cleaning and dyeing	...	5	2	3	3	...	1	400	.....
83	Cabinet-makers carriage-painters, etc.	...	1	1	1	...	...	1	1,000	.....
88	Bricklayers and masons	...	1	1	1	...	...	1	2,000	.....
89	Builders (other than buildings made of bamboos and similar materials), decorators, painters, tilers and plumbers, etc.	...	1	1	1	...	...	1	2,000	.....
90	Persons engaged in making, assembling or repairing motor vehicles or cycles.	...	3	...	2	...	...	...	.....	.....

\* P = Primary, H = High School, I = Intermediate, U = University.

1	2	3	4				5	6	7	
Group No.	Vocation.	Number of witnesses by whom suggested.	Educational stage which witnesses recommend should be completed before the vocation is taken up and the number of witnesses making such recommendations.				Number of witnesses who have reported on capital required.	Capital suggested as necessary for starting vocation.	Monthly profit to be expected after five years.	
			P. <sup>o</sup>	H. <sup>o</sup>	I. <sup>o</sup>	U. <sup>o</sup>		Rs.	Rs.	
92	Ship and boat builders	3	2	1	1	1	...	1	1,000 and upwards	.....
93	Gas works, electric light and power	2	1	2	2	1	...	...	5,000	.....
94	Printers and lithographers, engravers, etc.	5	2	3	2	2	...	...	.....	.....
95	Book-binders and stitchers, envelope-makers, etc.	2	2	2	...	...	...	...	.....	.....
96	Makers of watches and clocks, etc.	5	1	3	2	2	...	...	.....	.....
97	Workers in precious stone and metals, enamellers, imitation jewellery makers, guilders, etc.	1	...	...	...	...	...	...	.....	.....
98	Toy, kite, cage, fishing tackle, etc., makers	1	...	...	...	...	...	...	.....	.....
100	Owners of inland steamers and flats and their employees, officers, engineers, khalsis and firemen.	1	...	...	...	...	...	...	.....	.....
107	Post office, telegraph and telephone services	3	3	3	...	...	...	...	.....	.....
120	Bank managers, money-lenders, exchange and insurance agents, etc.	2	...	1	2	1	...	...	.....	.....
121	Brokers, commission agents, commercial travellers, warehouse owners and employees.	1	...	1	1	...	...	...	.....	.....
122	Trade in wool, etc.	1	1	1	1	...	...	1	100	50
123	Trade in hides, skins, etc.	1	1	1	...	...	...	1	2,000—3,000	.....
124	Fish dealers	1	...	...	...	...	...	...	.....	.....
131	Sellers of milk, butter, ghee, poultry, eggs, etc.	1	1	1	...	...	...	1	1,000	.....
133	Preparing carpets	2	...	1	1	...	...	1	200	50
141	Lawyers, clerks, petition-writers	1	...	1	1	1	...	1	100	.....
170	Medical practitioners of all kinds, including dentists, oculists and veterinary surgeons.	5	...	2	2	3	...	3	500—1,000	50—200
171	Vaccinators, compounders and nurses	1	...	...	...	...	...	...	.....	.....
172	Public scribes, stenographers and typists	3	...	2	2	...	...	...	.....	.....
175	Architects, surveyors, engineers and their employees	1	...	...	...	...	...	...	.....	.....
176										

177	Authors, editors, journalists, artists, photographers	1	...	...	...	1	...	...	...	...
183	Private motor-drivers, etc. ...	1	...	...	...	...	...	...	...	...
185	Cashiers, accountants, book-keepers, clerks, other employees in unspecified offices, etc.	2	...	1	1	2	...	...	...	...
186	Mechanics, otherwise unspecified	2	...	2	2	1	...	1	...	...
	Agriculture ...	2	1	2	1	2	...	2	...	2,500
	Cigar manufacture	2	...	1	2	1	...	1	...	2,500
	Grinding flour from <i>sakar kanda</i> potatoes	1	...	1	1	1	...	1	...	80,000
	Manufacture of scientific apparatus, surveying and drawing instruments.	1	1	...	1	1	...	...	...	200
	Repairing the above	1	1	...	1	1	...	...	...	...
	Making parts of cycles, umbrellas, hurricane lanterns, etc.	2	2	...	...	1	...	...	...	...
	Porcelain and glass manufacture	2	...	1	2	1	...	...	...	500
	Manufacture of nibs and writing ink, etc.	2	...	2	1	...	...	...	...	...
	Manufacture of indigenous medicines	2	1	1	...	...	2	...	...	25--200
	Poultry	2	2	1	...	...	1	...	...	200
	Pisciculture	2	...	1	1	2	...	...	...	30
	Manufacture of condensed milk	1	...	...	...	1	...	...	...	...
	Fish canning	1	...	...	...	1	...	...	...	...
	Mechanical and electrical engineers	4	...	4	4	4	3	...	...	150
	Painting and sketching	1	...	1	...	...	1	...	...	50
	Silkworm cultivation	1	...	...	...	...	...	...	...	...
	Architectural draughtsmen	1	...	1	...	...	...	...	...	150
	Mechanical draughtsmen	1	...	1	...	...	...	...	...	75
	Mechanical toy making	1	...	...	...	...	...	...	...	...
	Enamelling	1	...	...	...	1	...	...	...	...
	Manufacture of polish and laces for shoes and boots	1	...	1	1	1	...	...	...	...
	Manufacture of steel trunks, etc.	1	...	1	1	1	...	...	...	...
	Manufacture of bone manure (super phosphate)	1	...	...	1	1	...	...	...	...
	Cutlery	1	...	1	1	1	...	...	...	...
	Cane-work	1	1	...	...	...	...	...	...	...

\* P=Primary, H=High School, I=Intermediate, U=University.

## APPENDIX III.

**Estimate of Capital and Recurring Expenditure for a Central Workshop.****I.—Buildings.**

	Rs.	Rs.
Cost of building one workshop—		
(1) Semi-enclosed workshop (75' × 20') at Rs. 3 per sq. ft. ...	4,500	
(2) Enclosed office and materials store-room (20' × 20') at Rs. 4 per sq. ft. ...	1,600	
(3) Enclosed tool and works store-room (20' × 20') at Rs. 4 per sq. ft. ...	1,600	
Total ...	7,700	
1. Cost of building 3 workshops at Rs. 7,700 each ...		23,100
2. Office for the General Superintendent consisting of 2 rooms, (20' × 20') and (20' × 10'), at Rs. 4 per sq. ft. ...		2,400
3. 1 Electric fan and 2 lights for use in each of the 3 workshop offices and the Superintendent's office at Rs. 400 each office ...		1,600
4. Washing place (10 taps and troughs) ...		1,000
5. Drinking place (2 taps for Hindus and 2 taps for Muhammadans) ...		200
Total ...		28,300

**II.—Equipment.***A.—Carpentry shop.*

1. 10 benches 10' × 4' (with two vices for 4 students) at Rs. 120 ...	1,200
2. Office furniture (1 table, 2 chairs, almirah for drawing, almirah for spare tools, partition walls, almirah for screws, etc., iron-bar across the room) ...	450
3. Work and tools shed—	740
	Rs.
Shelves ...	500
36 tool lockers ...	240
4. Carpentry tools—	3,350
50 sets at Rs. 25 ...	1,250
Special tools ...	500
Machines (lathes, saws) ...	1,100
Sharpening machines (grind-stone, oil-stone) ...	500
Total ...	5,740

*B.—Fitters' shop.*

					Rs.
1.	18 benches 4' x 2' (with two vices) at Rs. 200	...	...	...	3,600
2.	Furniture for office (as in carpentry)	...	...	...	450
3.	Work and tools shed (as in carpentry)	...	...	...	740
4.	50 sets of tools at Rs. 15 each	...	...	...	750
5.	Machines—	...	...	...	7,450
					Rs.
	2 drills	...	...	...	1,200
	1 good lathe	...	...	...	2,500
	1 treadle lathe	...	...	...	700
	1 end sharpening machine	...	...	...	550
	2 forges	...	...	...	250
	Wheel	...	...	...	250
	Motor and erection	...	...	...	2,000
	Total	...	...	...	12,990

*C.—Sheet-metal shop.*

1.	10 benches (10' x 4') at Rs. 50	...	...	...	500
2.	Office furniture (as in carpentry)	...	...	...	450
3.	Work and tools shed	...	...	...	1,075
4.	12 forges at Rs. 50	...	...	...	600
5.	Other tools	...	...	...	500
	Total	...	...	...	3,125

*D.—Furniture for Superintendent's office.* ... 150

**Total Capital expenditure.**

I.	Buildings	...	...	...	...	28,300
II.	Equipment—	...	...	...	...	22,005
					Rs.	
	A.—Carpentry shop	...	...	...	5,740	
	B.—Fitters' shop	...	...	...	12,990	
	C.—Sheet metal shop	...	...	...	3,125	
	D.—Furniture for Superintendent's office	...	...	...	150	
	Total	...	...	...	...	50,305

**Recurring Expenditure.**

				Average monthly salary.
				Rs
Superintendent	...	...	...	600
3 Heads of Departments	...	...	...	...
at Rs. 200 each (Upper Subordinate)	...	...	...	600
Peripatetic Drawing Teacher	...	...	...	...
(upper subordinate)	...	...	...	200
9 mistries at Rs. 40 each	...	...	...	360
1 Clerk for the Superintendent	...	...	...	40
3 Coolies at Rs. 15 each	...	...	...	45
Carried over	...	...	...	1,845

			Rs.	Rs
Brought forward	...	...	1,845	
1 Chaprasi for the Workshop	...	...	15	
1 Durwan for the Workshop	...	...	15	
1 Chaprasi for the Superintendent	...	...	15	
1 Durwan for the Superintendent	...	...	15	
1 Night Guard	...	...	15	
Total per month	...	...	1,920	
Average annual cost on salaries	...	...	...	23,040
Electric Bill	...	...	...	1,000
Minor works	...	...	...	400
Depreciation of Equipment and renewal of tools	...	...	...	750
Contingencies	...	...	...	600
Materials—	...	...	...	5,400
			Rs.	
Carpentry at Rs. 6-8 per student	...	...	2,340	
Fitting at Rs. 3-8 per student	...	...	1,260	
Sheet metal at Rs. 5 per student	...	...	1,800	
Charcoal	...	...	...	500
Total recurring expenditure	...	...	...	31,690



**APPENDIX IV.****Syllabus of the Special Science Course for the High School Examination.****1.—Vernacular.**

Same as that of the Intermediate Board.

**2.—English.**

Same as that of the Intermediate Board.

**3.—Pure Mathematics.**

In addition to the syllabus for compulsory Mathematics of the Intermediate Board, the following :—

Metric system ; Solution of Quadratic Equations by resolution into factors. - (No detailed theory is required.)

**4.—Applied Mathematics.**

The meaning of speed, velocity, acceleration, mass, momentum, impulse, force, weight, centre of mass, centre of gravity ; experimental methods of illustrating these expressions and the relations between them ; uniform and uniformly accelerated motion in a straight line (formulae without proofs), vertical motion under gravity, laws of motion, work and energy, composition and resolution of forces in one plane, moments of forces, experimental determination of centre of gravity, simple machines (levers, balance).

**5.—Elementary Science.**

Measurement of length, area and volume. The balance, mass, density, specific gravity by simple methods.

Common properties of matter—hardness, porosity, brittleness, etc.

Solid, liquid and gaseous states.

Effect of heat on solids and liquids, change of volume, change of temperature. Thermometer, quantity of heat. Elementary idea of specific heat without knowledge of methods of determining it. Change of state. Melting and Boiling points. Latent heat ; evaporation. Distillation. Saturated solution. Crystallisation from a saturated solution and a molten substance. Crystalline shape.

Rectilineal propagation of light, shadows. Reflection of light by plane mirrors, images. Elementary knowledge of the use of prisms and lenses.

Magnets. Magnetic attraction and repulsion. The compass.

The production of electricity by friction. Properties of a charged body. Insulators and conductors.

Voltaic cell. Properties of a wire carrying an electric current.

The processes of sublimation and filtration. Solution in water. Soluble and insoluble substances. Distillation.

Physical mixture and chemical compounds. Chemical Combination and Decomposition.

Simple calculation from re-acting quantities.

The study of air, burning of phosphorus. Active and in-active air. Slow combustion of iron ; rusting of metals.

Oxygen gas—Preparation from mercuric oxide and from potassium chlorate, properties.

Hydrogen gas—Prepared from zinc and acid ; properties.

Study of water—Action of sodium on water, hard water, soft water. Electrolysis of water. Aqueous solutions of acids, alkalies and salt.

Study of carbon dioxide—By burning charcoal and graphite in air. By action of acid on chalk and soda.

Study of chlorine, hydrochloric acid.

#### **6.—Drawing and Practical Geometry.**

Same as that of the Intermediate Board.

## APPENDIX V.

**Estimate of Capital and Recurring Expenditure for Instruction in Elementary Science at the Dacca Collegiate School and for the Staff proposed.**

**A.—Capital Expenditure.***I.—Chemical Laboratory.*

	Rs.
1. Initial capital expenditure for chemicals and apparatus	2,500
2. Equipment— ... ..	4,000
	Rs.
(a) One demonstration table 12' x 3' x 3' (with drawers and cupboard on one side) ...	300
(b) 5 chemical benches 18' x 4' x 3' (with drawers and cupboards on both sides) ...	2,500
(c) 4 shelves 10' x 6' x 8' ... ..	200
(d) Water-connection and sinks ... ..	500
(e) Furniture for store-room ... ..	500
Total ...	4,000

*II.—Physical Laboratory.*

1. Initial capital expenditure for simple physical apparatus	...	3,000
2. Equipment ... ..	...	1,500

*III.—Building.*

Building ... ..	...	12,000
Rough estimate showing the approximate cost of erecting four rooms (two 24'-10" x 24'-10" and the other two 17'-3" x 24'-10") on the roof of the proposed laboratories—		

	Sq. ft.
Floor area of room (24'-10" x 24'-10")	617
" " " (24'-10" x 17'-3")	429
Total floor area of two rooms	1,046

					Rs.
The cost at Rs. 5-8 per sq. ft. for two rooms is	...				5,753
Estimated cost for four rooms	...			...	11,506
Or say	...	...	...	...	12,000
					<hr/>
Total capital expenditure	...			...	23,000

**B.—Recurring Expenditure.***I.—Chemical Laboratory.*

						Rs.
1. Staff—	...	...	...	...	...	2,136
					Rs.	
One teacher with B.Sc. Honours in Chemistry (initial salary)	...	...	...	...	125	
One laboratory assistant (initial salary)	...	...	...	...	40	
One bearer	...	...	...	...	13	
			Total	...	178 per month	
					or Rs. 2,136 per year.	
						2,136
2. Cost of running the chemical laboratory for 80 students in all (40 students in each class)	..	...	...	..	...	500

*II.—Physical Laboratory.*

1. Staff—	...	...	...	...	...	1,812
					Rs.	
One Science teacher (initial salary)	...	...	...	...	125	
Two laboratory bearers at Rs. 13	...	...	...	...	26	
			Total	...	151 per month	
					or Rs. 1,812 per year.	
2. Cost of running the Physical Laboratory and to provide for breakage of apparatus	...	...	...	...	...	750
Total recurring expenditure per year					...	5,198

**APPENDIX VI.****Syllabus for "Simple Book-keeping" for the High School Examination.****Part I.**

1. Précis of Simple Correspondence.
2. Indexing and Docketing.
3. Penmanship (speed and quality).<sup>o</sup>

**Part II.**

1. Purchases—Purchase Book.
2. Creditors' Accounts and Purchase Ledger, Trial Balance.
3. Sales Book—Debtors' Accounts and Sales Ledger.
4. Sales Account—Trial Balance.
5. Payments—Cash Book—Posting Cash—Statements.
6. Receipts—Cash Book—Posting Cash.
7. Capital Account—Trading for Cash—Full Accounts.
8. Cash Book—Expenses Accounts.
9. Cash Book—Discounts given and received.
10. Banking—Bank and Office Cash—Cheques.
11. Entering and posting a set of transactions with Cash, Purchase and Sales Books—Trial Balance—Errors and their detection.
12. Balancing Cash Books and Ledger Accounts—Trial Balance or Balances.
13. Drawing up Trading Account, Profit and Loss Account, and Balance Sheet from Trial Balance.

<sup>o</sup> To be determined by the Intermediate Board on report from the Training College.

## APPENDIX VII.

**Estimate of Capital and Recurring Expenditure for a Workshop to be attached to the Dacca Intermediate College.**

## 1. Capital Expenditure.

Initial capital expenditure for a Workshop consisting of a Smithy, a Foundry and a Fitters' shop accommodating 20 students in each at a time. Maximum accommodation for 12 periods of three hours in a week—360 students; at present only 120 students expected.

**Abstract.**

	Rs.			
A—Smithy	...	...	...	11,600
B.—Foundry	...	...	...	12,350
C.—Advanced fitters' shop	...	...	...	* 43,000
Total capital expenditure	...	...	...	<u>66,950</u>

**Details.****A.—Smithy.**

1. Accommodation and Building—	...	...	6,000
(1) One semi-enclosed shed for shop	60' x 20'		
(2) One room for office and tool stores	20' x 20'		
(3) One room for materials and work	20' x 20'		
Total	...	100' x 20'	
at Rs. 3 per sq. ft.,			Rs. 6,000
2. Equipment for Smithy—	...	...	5,100
			Rs.
30 sets of tools at Rs. 20 each	...	...	600
12 fires	...	...	600
12 anvils	...	...	1,200
1 Blower set	...	...	2,000
Other tools	...	...	200
Erection	...	...	<u>500</u>
3. Electric Installation	...	...	500
Total capital cost for smithy	...	...	<u>11,600</u>

**B.—Foundry.**

1. Accommodation and building, same as for smithy	...	...	6,000
2. Equipment for foundry—	...	...	5,750
			Rs.
30 sets of tools at Rs. 25 each	...	...	750
One cupola	...	...	2,000
One blower set	...	...	2,000
Boxes and tools	...	...	<u>1,000</u>
3. Electric Installation	...	...	600
Total capital cost for foundry	...	...	<u>12,350</u>

*C.—Advanced Fitters' Shop.*

				Rs.
1	Building—Same as for smithy	...	...	6,000
2.	Equipment—	...	...	36,000
			Rs.	
	One big lathe	...	...	3,000
	Six small lathes	...	...	3,600
	Two drills	...	...	1,500
	One planing machine	...	...	6,000
	One shaping machine	...	...	2,000
	One slotting machine	...	...	1,000
	One milling machine	...	...	7,000
	One grinding machine	...	...	2,000
	One emery wheel	...	...	300
	One shearing and punching machine	...	...	2,000
	One motor	...	...	1,200
	Foundations, shafting, hanger-brackets, columns, girder-work, pulleys, belting, etc., and cost of erection	...	...	4,800
	Five tables with two vices each	...	...	1,000
	Total	...	35,400	
		say,	36,000	
3.	Working Tools	...	...	400
	Electric Installation	...	...	600
				1,000
	Total capital cost of advanced fitters' shop	...	...	43,000

**II. Initial Recurring Expenditure.**

1.	Staff—	...	...	...	12,576
	(1) One Superintendent and Lecturer in Applied Mechanics and Machine Drawing in the B. E. S. (initial salary)	...	...	400	
	(2) Three upper subordinates for three workshops at Rs. 100 each	...	...	300	
	(3) Nine mistries at Rs. 30 each	...	...	270	
	(4) Three bearers and three darwans	...	...	78	
	Total monthly cost	...	...	1,048	
2.	Running expenses for the workshops—	...	...	...	3,000
	(1) Electric power consumption and mis- cellaneous	...	...	1,000	
	(2) Cost of materials at Rs. 8 per student for 120 students	...	...	960	
	(3) Cost of running fitters' workshop	...	...	1,000	
	Total	...	...	2,960	
		say,	...	3,000	
	Total initial recurring expenditure per annum	...	...	...	15,576

## APPENDIX VIIA.

**Estimate of cost for a course in Oils, Fats and Soaps at the Jagannath Intermediate College prepared by the Principal, Rai Bahadur S. N. Bhadra, M.A.**

*1. Capital expenditure.*

	Rs.
Apparatus including jacketed pans, dies for stamping, press for oil extraction, one autoclave for extraction of fats from oils (small size), Soxhlet's fat-extraction apparatus and a few other appliances, roughly speaking ...	3,000

*2. Recurring expenditure.*

One teacher with experience in the manufacture of oils, fats and soaps—initial salary Rs. 250 per mensem ...	3,000
Materials ... ..	240
Total ...	3,240 per annum.



## APPENDIX VIII.

**Syllabus for "Commercial Correspondence and Methods of Business" for the Intermediate Examination.****Part I.****SECTION A :—**

1. Correct English; parts of speech; words requiring certain prepositions; redundancy of expression; faulty constructions; punctuation.
2. Commercial letters; the arrangement; general hints; useful phrases.
3. Examples of letters; enquiries; replies to enquiries; agencies; orders sent, acknowledged and executed; references asked for and given; receipt of goods and remittances; complaints made; consignments and shipments; collection of accounts; bills of exchange; miscellaneous letters; insurance letters; circulars and general announcements.
4. Correspondence inward; outward; making up letters for the post; postage-book.

**SECTION B :—**

1. Penmanship (speed & quality<sup>2</sup>).

**Part II.**

1. Postal information—history of the Post Office system and its regulations; letters and parcels; money and postal orders; Savings Bank; Post Office holidays.
2. Telegraphs and Telephones.
3. The handling of goods; purchase and sale; forwarding.
4. Railways and Steamship Companies.
5. Common abbreviations used in business.
6. Terms used in commerce.
7. Approximate time taken in the transit of letters from Dacca to certain places abroad.
8. Foreign money and Indian equivalents.

**Estimates of additional expenditure at Jagannath Intermediate College.***A. Capital Expenditure.*

	Rs.
Capital grant for books, etc. ... ..	250

*B. Recurring Expenditure.*

1 Lecturer in history on an initial salary of Rs. 125 per month ... ..	1,500
1 Lecturer in mathematics on an initial salary of Rs. 125 per month ... ..	1,500
1 Lecturer in accountancy, book-keeping, etc., on an initial salary of Rs. 200 to Rs. 250 per month ... ..	3,000
<b>Total initial recurring expenditure per annum ...</b>	<b>6,000</b>

\* To be determined by the Intermediate Board on report from the Training College.

## APPENDIX IX.

### Extract from Preliminary report of Sub-Committee on Engineering.

#### Details of proposed (Non-University) Mechanical and Electrical Engineering Course at Dacca School of Engineering.

##### 4. Co-ordination with existing Engineering Courses.

The new course should not be an isolated one but should be co-ordinated with other Engineering courses in Bengal such as the Lower Subordinate course and the Upper Subordinate course in Civil Engineering. This would allow of a student who has qualified in one branch being able to take the other branch on preferential terms. By keeping all the common theoretical subjects towards the early part of each course classes could be combined and students of one branch could enter another branch at different stages without actually losing any of the lecture work they would require for the second branch. It is proposed that a passed Sub-Overseer or Lower Subordinate should be eligible to enter the Mechanical and Electrical course in the second year, and similarly a passed Overseer or Upper Subordinate should be allowed to enter in the third year class provided he made good his deficiency by taking certain classes also of the second year. We think this could be arranged.

The above arrangement holds good between the existing students of the Joint Technical Examination Board's courses in Civil and Mechanical and Electrical Engineering, so that there would be established precedent for it.

It might also be possible to co-ordinate the proposed course with the similar courses held at Sibpur College or perhaps with certain of the Intermediate Board's vocational courses but that would be a matter for future arrangement.

##### 5. Combination with existing Courses.

Since the proposed course would correspond in length and standard with the existing Civil Engineering Upper Subordinate course a considerable portion of the range of theoretical subjects would be common and in such instances the classes would be combined and much economy thereby effected. Care would, of course, be taken to fix the maximum size of a combined class.

##### 6. Size of Classes.

To start with, it is proposed that the maximum number in each of the 1st, 2nd and 3rd years of the proposed new course should be limited to 25 students.

##### 7. Entrance Qualifications.

It is proposed that the entrance qualifications should be as nearly as possible identical with those required of candidates for the Civil Engineering Upper Subordinate course.

##### 8. Length of course, session and vacations.

The length of the course proposed is one of three years at the Engineering School followed by a year's practical training at a works. The session and vacations would correspond exactly with those of the Lower and Upper Subordinate Departments of the Engineering School.

### 9. *Certificates.*

Should the proposed course adopted be that of the Joint Technical Examination Board in Mechanical and Electrical Engineering then the final certificate awarded would be the Diploma of that Board in that Branch; on the other hand if the course be a Dacca School of Engineering course the certificates or diplomas awarded would be under the signature of the authorities of the Dacca School of Engineering and that of the Director of Public Instruction; in either case the standard aimed at would be the same.

### 10. *Tuition fees.*

It is proposed that the tuition fees should correspond exactly with those charged in the Upper Subordinate Department of the Engineering School.

### 11. *Standing rules and orders.*

The standing rules, regulations and orders as laid down for the Upper Subordinate Department would all apply (where applicable) to the Mechanical and Electrical section.

### 12. *Examinations.*

In the event of the course adopted being that of the Joint Technical Examination Board the Examinations would be those laid down by that Board, but if the course be purely a Dacca School of Engineering course then the interim and final examinations would be laid down and arranged for by the authorities of the Dacca School of Engineering, care being taken to make the standard as far as possible correspond with the Joint Technical Examination Board standard. In both events the scale of examination fees charged and the remuneration of examiners should follow the existing scale of the Joint Technical Examination Board.

### 13. *Hours of Study.*

The time-table for the proposed new course would as nearly as possible correspond to that obtaining for the existing Upper Subordinate course.

We understand that sufficient accommodation is available at the Engineering School and Workshops for the proposed new course, though some minor structural alterations might be necessary and these have been allowed for in the estimates.

### 15. *Scholarships.*

It is proposed that six scholarships in all (two in each class) be made available for award by the Engineering School authorities; these should be of the value of Rs. 16 monthly.

### 16. *Prizes.*

It is proposed that Rs. 100 be made available for the award of prizes annually in the Mechanical and Electrical Department.

### 17. *Athletic Section.*

Students of the proposed new Mechanical and Electrical Department would come under the same athletic club rules and regulations as students of the Lower and Upper Subordinate Departments.

### 18. *Syllabus of Instruction.*

The syllabus of instruction would be that already laid down by the Joint Technical Examination Board or, in the event of that course not being adopted, a syllabus covering at least all the ground laid down in the Joint Technical Board's course.

19. *Capital Expenditure.*

				Rs.
1.	Extra class room furniture required	...	...	1,750
2.	Structural alterations, partitions, say	...	...	2,000
3.	For the equipping of a new Electrical Engineering Laboratory, allowing for apparatus already in stock, for 25 students	...	...	17,000
4.	For the building and equipping of a prime movers laboratory, i.e., in C. I. shed attached to workshops, for 25 students, and extra machines for machine shop	...	...	24,000
5.	Extra hostel furniture	...	...	1,875
Total capital expenditure				46,625

20. *Annual expenditure (recurring).*

1.	Extra lecturing staff required	...	...	...	6,000
					Rs.
	One lecturer on	Rs. 200	...	...	2,400
	Ditto	„ 150	...	...	1,800
	„ assistant teacher	„ 75	...	...	900
	Prime movers laboratory assistant on	„ 75	...	...	900
					<u>6,000</u>
2.	Materials for students' workshop courses and running cost of laboratories	...	...	...	1,450
3.	Item of existing consolidated grant which would require an increase proportionate to the increased number of students	...	...	...	1,660
					Rs.
	Contract contingencies increase necessary	...	...	...	250
	Library grant	...	...	...	100
	For athletic and out-door games	...	...	...	150
	Science laboratory chemicals and apparatus	...	...	...	100
	Purchase of materials and tools for workshop	...	...	...	750
	Machines, laboratory requisites	...	...	...	45
	Prizes	...	...	...	100
	Annual cost of calendar	...	...	...	50
	Medical store for hostel	...	...	...	90
	Hostel common room allowance	...	...	...	25
					<u>1,660</u>
4.	Scholarship	...	...	...	1,152
Total recurring expenditure				...	<u>10,262</u>

21. *Conclusion.*

It should be mentioned that the foregoing scheme provides only for the carrying on of a non-university course in Mechanical and Electrical Engineering. The scheme for the collaboration of the University and the Engineering School in a proposed Electro-technics course is not included in the above costs.

## APPENDIX X.

**Scheme for the establishment of Civil, Mechanical and Electrical Engineering Degree Courses at Dacca University.**

1. *Origin and purpose of the scheme.*—This scheme has been prepared by a special sub-committee of the Dacca Technical and Vocational Education Committee appointed for the purpose at a meeting of the sub-committee on Engineering Education held on 28th December 1922. The special sub-committee were asked to frame a scheme for degree courses in (i) Civil and (ii) Mechanical and Electrical Engineering proposed to be undertaken by Dacca University in collaboration with the Dacca School of Engineering at the same time making use of any local facilities for practical Engineering training that may be available. The idea is that this report may be put up for consideration and approval to (i) the Dacca University authorities and (ii) the Dacca Technical and Vocational Education Committee, the last named body making final recommendations to Government in the matter.

2. *Demand for the proposed courses.*—The question as to whether the market in Bengal for qualified Civil, Mechanical and Electrical Engineers is over or under supplied at present, is one on which an authoritative pronouncement cannot be made. With the object of ascertaining the facts in the above connexion the Chairman of the main Committee recently addressed some twenty or more representative private firms or public bodies in Bengal asking for their opinions. Nineteen replies were received showing the undernoted opinions:—

		Civil Engineering.	Mechanical Engineering.	Electrical Engineering.
Demand in excess of supply	...	6	8	5
"    less than    "	...	5	2	2
"    equal to    "	...	1	1	1
No reply to question	...	7	8	11

The above shows a balance of opinion that generally, for engineers of the above classes, the demand is in excess of the supply. The facts however that a number of the firms addressed did not reply and that those who did reply only answered about half of the questions, rather weakens the value of the above result. Other considerations however put before this sub-committee support the opinion that the supply of such trained engineers is not in excess of the demand and they are satisfied that there is room for this scheme in the educational system of Bengal.

3. *Joint nature of proposed courses.*—In drawing out this scheme the sub-committee have been faced with the following existing conditions—(i) The Dacca University possesses nothing in the way of an Engineering institution either incorporated in or attached to it and Engineering Education does not at present come within its scope. (ii) An old established Government Engineering institution of a professional but non-university type is actually situated in Government ground within the boundaries of the Dacca University area. (iii) Certain Commercial and other Engineering concerns of a type which might be used for the practical training work of students are available within easy reach of the University area.

Again the training of an engineer of a high standard involves tuition and practical work which readily sub-divides itself into four parts or classes, namely, (a) theoretical subjects, (b) professional subjects, (c) workshop practice and (d) practical training after graduation.

In virtue of these foregoing conditions the obvious solution of the problem is to propose that the engineering courses in question should be designed to be of a joint nature, the University, the Engineering School and the commercial firms concerned taking, as far as convenient, the theoretical subjects, professional subjects and

workshop practice, and practical training respectively. This is the principle which has been followed in working out the details following hereon; these details show the functions to be undertaken by each of the above agencies respectively.

4. *Nature of proposals as regards the Mechanical and Electrical Degree Course.*—Mechanical Engineering and Electrical Engineering are more closely allied to each other than is Civil Engineering to either; in consequence, many universities and technical colleges offer combined courses in Mechanical and Electrical Engineering while others offer separate courses in each. If the courses are combined it necessarily requires a longer period to come to the same standard in either branch than it does when taken separately, but there are advantages and disadvantages in both cases. After looking at this question from various points of view the sub-committee recommend that the courses should be arranged as follows, viz.:—(i) a Civil Engineering Course of 4 years and (ii) a combined Mechanical and Electrical Engineering course of 4 years.

5. *Relation of proposed courses to existing engineering courses in Bengal.*—The only engineering courses in Bengal which are recognised by Government as definite standards for recruitment in their different departments are (i) the Civil Engineering Course of the Bengal Engineering College, Calcutta, (ii) the Civil Engineering Courses of the Joint Technical Examination Board, (iii) the combined Mechanical and Electrical Engineering Course of the Bengal Engineering College, (iv) the Survey Courses controlled by the Survey Education Advisory Board. Only the first of these is of university standard, the others being of certain professional standards required for different grades in the various Government Technical Departments. The engineering courses proposed herein being of university standard are designed to be (as far as civil engineering is concerned) of at least an equal standard to that of (i) above and the combined mechanical and electrical course proposed will of course be of a higher standard than that under (iii) above. At present there is no door open leading from the courses under (ii) to the course under (i) above; this is a pity since the qualified men under (ii) are admittedly well qualified for entrance to (i). An attempt to remedy this defect in connection with the courses herein proposed is made in paragraph No. 10.

6. *Reference to existing proposals which may affect this scheme.*—At this stage of report it should be pointed out that the Dacca Technical and Vocational Education Committee have recently prepared and recommended for adoption to Government many schemes of a technical and vocational type. Two of these schemes would affect the present proposals; the schemes referred to are (i) scheme for the institution of a non-university course in mechanical and electrical engineering at the Dacca School of Engineering and (ii) scheme for the introduction of a Dacca University Course in Electro-technics forming part of the Physics Honours Course for the B. Sc. degree.

A reference to scheme (i) above, Appendix D—I, paragraph 3 of printed Interim Report of the Dacca Technical and Vocational Education Committee will show that the non-university mechanical and electrical course proposed was intended (as one of its objects) to form a base on which the mechanical and electrical course of University standard (now proposed) could be superimposed.

Paragraph 1 of the above-quoted report also makes it clear that scheme (ii) above, i.e., that for the electro-technics course cannot be carried out without the first as a base.

Now the non-university mechanical and electrical course mentioned in (i) above has recently been rejected by Government. The sub-committee are therefore faced with the difficulty of having no base on which to build the Mechanical and Electrical University Courses herein proposed and have no alternative but to treat the case *de novo* and frame their estimates on the assumption that the schemes (i) and (ii) already mentioned will not be sanctioned.

This is a pity since the cost of the whole three schemes (which would have been inter-related) would probably not have been so much greater than the cost of the University Mechanical and Electrical Course alone. There is however reason to think that Government may yet reconsider their decision regarding the non-university Mechanical and Electrical Engineering Course.

7. *Cost of this scheme—how proposed to be met.*—The question of how money for this scheme should be allotted by Government is not one for this sub-committee to report on; there are however certain considerations and suggestions in that connection which can appropriately be set forth here for the information of the authority who may ultimately sanction funds.

This scheme being of a joint nature, as already described in paragraph 3, will necessitate the splitting up of the funds for the carrying on of the courses into three heads, viz. :—(i) Initial and recurring expenditure to be incurred by the Dacca University in undertaking their part of the courses, (ii) Initial and recurring expenditure to be incurred by the Dacca School of Engineering in undertaking its part of the courses and (iii) Recurring expenditure required for practical training purposes with commercial or other firms.

The funds for item (i) would naturally be provided and controlled solely by the Dacca University authorities ; as regards item (ii) the School of Engineering being a Government institution, the funds for the carrying on of the parts of the courses to be undertaken by that institution should be provided by the Education Department and the amounts added to the consolidated grants of that institution. Regarding the administration of the funds required for practical training purposes (i.e., item (iii) above), if Government are to provide the money for this they may prefer to have it administered through the Dacca School of Engineering authorities since that authority is directly responsible to and under the control of Government, but this is a matter for Government to decide. It might be suggested that the proposed Faculty of Engineering mentioned in paragraph 20 would be a suitable authority to administer such funds. The faculties of the University however do not deal directly with funds, neither have they clerical establishment nor are they, as bodies, responsible to Government. They would therefore not form a suitable agency for the disbursement of Government Funds.

8 *Maximum number of students suggested for each course.*—The question of the maximum number of students to be admitted to each course or to each class is dependent on the maximum output of graduates desired annually from each course.

Since a considerable number of both the theoretical and professional subjects will be common to both courses proposed it will be necessary or appropriate to have combined classes. If we assume that fifty students is a suitable maximum, we think that the undernoted output might be expected annually (i.e., allowing for failures and the usual shrinkage of classes from various causes).

#### *Approximate output annually.*

Civil Engineering.

Mechanical and Electrical Engineering.

14

16

The numbers to be admitted each session to the 1st year classes of each course would be limited to the number of vacancies, having regard to the above maximum numbers fixed for these classes, and to the number of vacancies which would be occupied each year by students taking a class for a second time.

9. *Length of proposed courses.*—The considerations which govern choice of the length of course are mainly as follows—(i) the final status or standard of the engineering degrees herein proposed must be kept equal to or higher than that of the engineering degrees of existing Indian Universities ; (ii) the period necessary to take a student over the professional and practical work of the courses as designed, would suitably be of 4 years' duration ; (iii) the length of time and money expended by a student in gaining the knowledge and status signified by a University degree should be to some extent commensurate with the return he may expect in the way of remuneration in any appointment that his knowledge and degree fit him for. Keeping the points in view we think that a suitable length of course for (i) civil and (ii) the mechanical and the electrical branches should be four academic years at the University followed by a year's practical training on Public Works or with commercial engineering concerns.

10. *Entrance qualifications.*—The qualifications to be laid down for entrance to the proposed courses depend to some extent on the length chosen for such courses ; the shorter the course the higher will be the necessary entrance qualifications.

In what follows it is assumed that the length of courses is fixed as suggested in paragraph 9 above.

Under the Dacca University Act the University is bound to require as its minimum entrance test the passing of an Intermediate Examination of an Indian University recognised by law or its equivalent ; and it may impose any supplementary test which it

thinks fit. It seems desirable that for students entering the Engineering Faculty there should be a special entrance examination in Mathematics (including Mechanics), Physics, Chemistry, elementary drawing and general knowledge which would be regarded as supplementary to the qualification of having taken an Intermediate Examination, this being regarded only as a test of general education.

It would seem very desirable that the University should further make provision for the holding of a special examination which in itself could be regarded as equivalent to an Intermediate Examination and which could be taken by students who had obtained the Upper Subordinate certificate (Theoretical Course only) of the Joint Technical Education Board, and for other students who had followed a practical course such as that given in Kanchrapara. Students starting with the practical knowledge given by such a training would have a great initial advantage in following a University career which is not open to them at present.

11. *Subjects to be included in the proposed courses.*—The subjects to be included in the courses for each successive year and the approximate time to be allotted to each is detailed in Appendices 1 and 2 attached hereto. In drawing these up the principle has been followed of keeping as far as possible the theoretical subjects towards the early part of the courses and the professional subjects towards the latter half; the practical work in the laboratories and workshops being distributed uniformly over the whole period of the course. It is not thought appropriate to lay down detailed syllabuses of subjects at this stage, but no difficulty is anticipated with these and they could be drawn out later in the event of the courses being sanctioned.

12. *Session, Vacations and Holidays.*—Owing to the condition that the proposed courses will be taken partly at the University and partly at the Engineering School it may be necessary to change the Engineering School session, vacation, etc., to correspond with that of Dacca University. No difficulty in this connection is anticipated since the Engineering School session and vacation already closely corresponds to that of the University.

13. *Examinations.*—We think that in the Engineering Courses now proposed some interim examination or some part of the degree examinations should take place say at the end of the 2nd year of the course; this examination as well as the final examination would of course be dealt with by the Faculty of Engineering of the University. It would be advisable to call the first examination "First Engineering Examination" and not Intermediate Engineering Examination. There might also be class examinations at the end of each year, to ensure that only students who have worked properly throughout the year should be promoted to a higher class.

14. *Certificates and Diplomas.*—In the event of there being any interim examinations in the courses proposed (which question ought to be answered by the Dacca University authorities) there will arise the question of whether any University certificate should attach to such; that also is clearly a matter for the Dacca University authorities to decide. A final University diploma of B. E. in Civil or (Mechanical and Electrical) Engineering as the case may be should be granted to each student who has undergone the prescribed course and passed the prescribed interim and final examinations. The question of whether a College diploma (as obtains at the Bengal Engineering College, Calcutta) should be granted to a student, who after graduating at the University successfully undergoes the year of practical training mentioned in paragraph 18, should be left to Government and the authorities of the Engineering School to decide, if need be, later.

15. *Fees.*—The fees of all kinds leviable on a student of either of these proposed courses (such as entrance fees, tuition fees, examination fees, caution money, etc.) will fall under two groups, viz.:—(i) fees of any kind payable to the Dacca University authorities and (ii) fees of any kind payable to the Dacca School of Engineering. Some attempt would have to be made to apportion such fees so that students would not have an unusual burden to bear in this respect and at the same time so that both the University and the Engineering School would share in a manner commensurate with the weight of work undertaken by each in the courses.

16. *Time table of lectures and practical work.*—In the appendices 1 and 2 attached to this report the number of lectures (required for each subject during the different



years of the courses) is stated after the subject concerned. This will act as a guide in drawing up the time tables later if necessary, but at this stage it is not thought appropriate to draw out a time table.

17. *Survey Camp for the Civil Engineering undergraduates.*—Following the practice of other Civil Engineering degree courses in India it will be necessary to give the Civil Engineering under-graduates experience in practical surveying work in the field and for this purpose they should go to mofussil Survey Camp for a month or six weeks during the last two years of their courses. Such camps are already organised for the existing non-university courses at the Dacca School of Engineering and no difficulty is anticipated in also providing for the mofussil Survey training of the under-graduates in the Civil Engineering degree course proposed in this scheme. These camps are usually held between the end of the Pujahs and Christmas.

18. *Practical training arrangements.*—After a student has successfully passed his interim and final examinations and complied with all the other requirements of his course he should (as already proposed in paragraph 14) be eligible for the University degree of Bachelor of Engineering in the branch which he has undergone. His official connection with the University should end there.

Before he will be suitable for employment, however, unless he has had good practical training before entering the University, he will require a certain period of practical training or experience; this period would usually extend to one calendar year. The engineering institution from which a student comes, usually makes all arrangements for his practical training and a student has to comply with prescribed rules and regulations in that connection.

A student who has taken his engineering degree at the University and has successfully completed a period of practical training should be eligible for the diploma or associateship (of the institution from which he comes) in Civil (or Mechanical and Electrical) Engineering.

Efforts should be made (in the event of these courses being sanctioned) to have the above mentioned diploma or associateship recognised by Government as a qualification for the Assistant Engineer's grade in the Public Works Department and a share in the various guaranteed Government appointments should be claimed.

It should not be compulsory on a student who has graduated at the University to undertake a practical training course unless he desires to do so.

In the case of Civil Engineer graduates who come from Government controlled Universities the practical training period is usually taken in the Public Works Department or with Corporations, Port Trusts or other public authorities. It is also competent for students to take their practical training period with private firms if such is approved of beforehand by the authority controlling the practical training arrangements. The practical training period of mechanical and electrical engineer graduates usually takes place in the workshops of Government departments such as Railway workshops or in the workshops of public, semi-public or private concerns and bodies such as Port authority or Corporation workshops, Electric Light and Power and Tramway Companies, etc.

There is no obligation that the practical training should be taken in the district or anywhere near the institution from which the student comes.

19. *I. Additional staff required at the University and the Engineering School to deal with proposed Courses.*—The subjects included in these courses which are to be taken at the Dacca University are detailed in Appendix I.

The additional teaching staff required for this purpose is suggested as follows:—

1. One assistant lecturer in Physics on Rs. 200 fixed.
2. One assistant lecturer in Chemistry on Rs. 200 fixed.
3. One assistant lecturer in Mathematics on Rs. 200 fixed.

II. *The additional staff required at the Engineering School to deal with the part of the courses to be taken by that institution is estimated as follows :—*

		Initial Annual Cost.
		Rs.
<b>Group I.</b>		
1. To take (i) Civil engineering general practice, (ii) Surveying and levelling, (iii) Geodesy and (iv) Hydraulics—One Professor of Civil Engineering in the I. E. S. cadre and scale (500-50-1,750) but starting on Rs. 1,000	...	12,000
2. To assist the Professor of Civil Engineering and also to take Geology—One lecturer in the Bengal Educational Service cadre, scale (250-800) starting on Rs. 420	...	5,040
3. One laboratory assistant in the civil engineering branch to take Civil Engineering and Hydraulics laboratory work—a B. Sc. graduate (in Education department laboratory assistant's grade) starting on Rs. 150	...	1,800
<b>Group II.</b>		
1. To take (i) Mechanics, (ii) Strength of materials, (iii) Theory of structures, (iv) Graphic statics, and (v) Materials and construction—One lecturer in the B. E. S. (scale 250-800) starting on Rs. 500	...	6,000
2. One assistant for above officer; a B. E. graduate with some teaching experience on B. E. S. scale but starting on Rs. 300	...	3,600
3. One B. Sc. graduate as laboratory assistant for above group in Education department laboratory assistant scale, starting on Rs. 150	...	1,800
<b>Group III.</b>		
1. One Professor of Mechanical and Electrical Engineering to take the advanced work in that section and generally supervise that branch—One officer in the I. E. S. cadre and scale but starting on Rs. 1,000	...	12,000
2. One assistant to specialise in the Mechanical Engineering side—a lecturer in the B. E. S. cadre and scale but starting on Rs. 420	...	5,040
3. One assistant to specialise in the Electrical Engineering side—a lecturer in the B. E. S. cadre and scale but starting on Rs. 420	...	5,040
4. One laboratory assistant for prime movers laboratory, etc.—a B. Sc. graduate in Education department laboratory assistant's scale and starting on Rs. 150	...	1,800
5. One laboratory assistant for Electrical Engineering laboratory, etc., on Rs. 150	...	1,800
<b>Group IV.</b>		
1. To deal with extra clerical work in Engineering School office—One Accountant and book-keeper starting on Rs. 100	...	1,200
2. Two additional clerks Rs. 35-35—40-2-80	...	845
3. To deal with practical work of students in workshops—One additional assistant workshop Foreman (Upper Subordinate certificate holder) starting on Rs. 75	...	900
<b>C. O. Rs.</b>		<b>58,860</b>

Initial  
Annual cost.

Rs.

Brought forward ... 58,860

3. To deal with the manual work of undergraduate students in the different shops—extra mistri to each shop, say, six mistries at Rs. 40 per month ... ..	2,880
4. Extra coolies or laboratory bearers required, three for workshops and three for the new laboratories, i.e., six at Rs. 15 per month ... ..	1,080
Total initial annual cost of additional teaching and workshop staff ... ..	62,820

*Note.*—The annual cost would gradually rise due to the incremental scale of the staff.

III. Over and above the permanent additional staff required at the Engineering School, visiting lecturers to take the special subjects mentioned in the 4th year Civil Engineering Course (Appendix I) would be required.

We think that a sum of Rs. 3,000 a year should be allotted for such courses.

The courses should consist of about ten lectures and visiting lecturers should set and examine a final paper in their subject for the final engineering degree examination for which remuneration should be given on a scale to be fixed by the University Faculty of Engineering.

Remuneration to the officer of the Dacca Electric Supply Company who may undertake the work and the arrangements for the practical courses in the mechanical and electrical section (mentioned in Appendix I for 3rd and 4th year students) would have to be provided for. As is suggested in the case of the visiting lecturers above the remuneration for this might take the form of an honorarium of say 1,500 for each year's work or Rs. 50 per student provided the total sum did not fall below Rs. 1,000.

20. *Control and administration of the proposed courses.*—In considering proposals for a suitable method of control and administration for these courses the sub-committee have been faced with the following conditions. As already set forth in paragraph 3 the work of the courses would be undertaken by three different authorities none of which, at present, have any common points of contact. In the first place we have the Dacca University, a new creation in its infancy with no traditions or precedents to either help it or hamper it and with no Engineering faculty within its scope.

In the second place we have the Dacca Ahsanulla School of Engineering, a Government institution under the Education Department established in 1876 and which by a gradual growth and raising of its status has attained its present functions in the educational system of Bengal; that institution is directly under the authorities of the Education Department and all its permanent staff are officers of that department. The immediate control of its finance, etc., is under a Governing Body. The control of the majority of its examinations come under the Joint Technical Examination Board. It takes the whole load, in Bengal, of producing engineering assistants in the Upper Subordinate grades of the Public Works Department or with District or Local Boards, Corporations, Municipalities, Port Trusts or other public or semi-public bodies; it also produces about fifty per cent. of the Sub-Overseers required by such bodies in Bengal. The Dacca School of Engineering has made a speciality of these courses and with the recent closing down of the courses, in these grades, at the Sibpur Engineering College, Calcutta, it has now a monopoly of such. The institution finds a great demand for its output and the pressure for admission is very great. In consideration of the foregoing it seems quite clear that the present functions of the Engineering School must be preserved irrespective and apart from any other courses now proposed.

In the third place there is the practical training work during the currency of the courses to arrange for; in the case of Civil Engineers the workshops of the Dacca School of Engineering would be suitable but in the case of Mechanical and Electrical Engineers the students would be better to have some practical work with a concern like the Dacca Electric Supply Company, with the consent of the authorities of that concern. We believe that such might be arranged but a certain expenditure on that account would be necessary.

Looking therefore to the facts that the proposed courses would come under the direction of three authorities which must remain independent of each other, it will be necessary in the first instance to allow each authority to have its own rules and regulations and to have sole jurisdiction within the scope of its own part of the work, also it will be necessary to have a combined committee of management on which these different authorities would be adequately represented. If the University institutes a faculty of engineering, that body might constitute a suitable committee of management. Only it would have to be clearly understood or laid down that the conditions under which the different authorities originally consented to undertake their part of the work would not be subject to alteration or review by such faculty without the consent of the authority concerned.

21. *Scholarships and Stipends.*—The Dacca University would have to deal with the provision of scholarships, if any, within the University courses. Nothing can be suggested in that connection at this stage.

22. *Prizes.*—The question of prizes would be dealt with in a similar manner to that suggested for scholarships above.

23. *Residence of students.*—As the students would in the first instance be University students we presume they would have to be provided for in the way of hostel accommodation by the University authorities, the University rules and regulations in that respect being already laid down in their Ordinances and Regulations.

24. *Equipment.*—The equipment required to carry out these courses will fall under two heads, viz. :—(i) equipment required by the Dacca University to undertake its part of the courses and (ii) equipment required by the Engineering School to undertake its part of the courses.

The only parts of the courses (to be taken by the University) which require extra equipment or new equipment are (i) Physics (ii) Chemistry.

*I.—These may be estimated to cost approximately as follows :—*

	Rs.
1. Extra apparatus and equipment required at University Physics laboratories to deal with 50 students in each of the 1st and 2nd year courses ... ..	1,000
2. Extra apparatus and equipment required at the University Chemical laboratories to deal with 50 students in each of the 1st and 2nd year courses ... ..	1,000
Total for University ... ..	2,000

*II.—The extra equipment, etc., required at the Engineering School to enable that institution to undertake these courses may be detailed approximately as follows :—*

	Rs.
1. Structural alterations in the way of partitions, etc., to provide the necessary extra class rooms ... ..	6,000
2. Extra class room furniture required ... ..	4,500
3. For the equipping of a new Electrical Engineering laboratory (allowing for apparatus already in stock) for 25 students taking a degree standard course ... ..	27,500
4. For the building and equipping of a prime movers laboratory in C. I. shed, attached to workshops of Engineering School for 25 students taking a degree standard course ... ..	28,000
5. Extra lathes and machines required in machine shop ... ..	10,000
6. Provision of models, specimens, instruments, etc., for the Geology class of 2nd year course ... ..	5,000
7. For provision of 10 ton metal testing machine, cement testers and other apparatus for the Civil Engineering laboratory ... ..	7,500
Total for Engineering School ... ..	88,500

25. *Capital expenditure.*—The total capital expenditure in connection with these courses is estimated as undernoted.

*I.—To be incurred by the Dacca University authorities.*

	Rs.
As per paragraph (24) I ... ..	2,000

*II.—To be incurred by the Education Department on behalf of the School of Engineering.*

As per paragraph (24) II ... ..	88,500
Total estimated capital expenditure ...	<u>90,500</u>

26. *Recurring expenditure.*—The annual recurring expenditure estimated in connection with these courses is as follows :—

*I.—To be incurred by the Dacca University authorities.*

1. Extra teaching staff, assistants and menials as per paragraph (19) I ... ..	7,200
2. Materials and upkeep at Physics laboratory (annually) ...	750
3. Ditto Chemical ditto (ditto) ...	750
Total (initial) recurring expenditure at University ...	<u>8,700</u>

*II.—To be incurred by the Education Department on behalf of the Engineering School.*

1. Extra teaching staff, assistants and menials as per paragraph (19) II ... ..	62,820
2. Annual cost of special lectures and practical training costs, etc., as per paragraph (19) III ... ..	4,500
3. Materials and upkeep for prime movers laboratory ...	800
4. Ditto Electrical Engineering laboratory ...	750
5. Annual cost of materials for students workshop courses ...	1,000
6. Materials and upkeep for Geology classes (annually) ...	750
Total lump sum addition to the various items of the Engineering School consolidated grant to enable it to deal with the additional number of students due to the Engineering degree courses ... ..	<u>5,000</u>
Total (initial) recurring expenditure at Engineering School ...	<u>75,620</u>

We recognise that the most difficult problem in carrying out this scheme will arise from the dual nature of the control but with a University faculty of Engineering on which all interests were adequately represented we think that difficulty could be overcome. The necessity of preserving intact the existing functions of the Ahsanulla School of Engineering is also very important.

Should this scheme be adopted by the authorities concerned it would be necessary for Government to raise the status of the Ahsanulla School of Engineering to that of an Engineering College.

We think a period of about six months would be necessary to make all necessary preparations for the starting of the courses proposed under this scheme.

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W. J. KERR.  
A. N. MOBERLY.  
D. C. ROY.

S. C. RAI CHOUDHURY.  
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O. J. HENDERSON.

## Appendix I.

## Civil Engineering Degree Course.

List of subjects to be taken during each successive year of the course and the approximate number of hours per week allotted to each. The total session being assumed to be of about 8 months' duration.

## 1st Year Course.

COMMON TO BOTH CIVIL AND MECHANICAL AND ELECTRICAL SECTION.

## I. Subject to be taken at Dacca University.

1. Mathematics up to co-ordinate Geometry and Differential and Integral Calculus ... 3
2. Physics, including properties of matter, sound, light, heat and Magnetism and Electricity including any necessary laboratory work ... 5
3. Inorganic Chemistry including laboratory work ... 4

## II. Subjects to be taken at Dacca Engineering School.

1. Mechanics and Mechanics laboratory ... 3
2. Strength and elasticity of materials ... 2
3. Elements of Mechanical Engineering ... 2
4. Elements of Electrical Engineering ... 2
5. Engineering, drawing and design ... 2
6. *Workshop practice.*—Three morning periods of 2½ hours (in Carpentry and Blacksmithy).

## 2nd Year Course.

## CIVIL ENGINEERING.

## I. To be taken at University.

1. Mathematics—Applied. C. ... 3
2. Physics—Physics laboratory advanced. C. ... 4
3. Chemistry and Chemical laboratory advanced. C. ... 4

## II. To be taken at the Engineering School.

1. Mechanics and Mechanics laboratory advanced. C. ... 4
  2. Theory and design of structures ... 2
  3. Graphic Statics ... 1
  4. Surveying, Levelling, general principles ... 2
  5. Civil Engineering drawing and plans ... 4
  6. Geology, general and Indian ... 2
- Workshop practice. C. Three periods per week of 2½ hours (in Pattern making and Foundry shop).

*Surveying in local fields.*—Two periods per week of 3 hours each.

## MECHANICAL AND ELECTRICAL ENGINEERING.

## I. To be taken at University.

1. Mathematics—applied. C. ... 3
2. Physics—Physics laboratory advanced. C. ... 4
3. Chemistry and Chemical laboratory advanced. C. ... 4
4. Thermodynamics ... 1

## II. To be taken at the Engineering School.

1. Mechanics and Mechanics laboratory advanced. C. ... 3
2. Motive power Engineering and laboratory ... 4
3. Electrical Engineering and laboratory ... 4
4. Engineering drawing ... 4
5. Workshop practice. C. Three periods per week of 2½ hours each (in Pattern making and Foundry shop).

Subjects marked O in 2nd Year Course are common to both branches.

## 3rd Year Course.

## CIVIL ENGINEERING.

*To be taken at Engineering School.*

1. Materials and Construction ... 2
  2. Civil engineering laboratory ... 4
  3. Civil engineering drawing and design ... 4
  4. Civil engineering, general principles and practice in all branches ... 5
  5. Engineering costs and estimating ... 2
  6. Geodesy ... 2
  7. Hydraulics and Hydraulics laboratory ... 3
- Workshop practice—Three periods ( $2\frac{1}{2}$  hours) per week in machine shop.
- Survey camp of six weeks starting immediately after Pujah vacation in mofussil field.

## MECHANICAL AND ELECTRICAL ENGINEERING.

*To be taken at Engineering School.*

1. Materials of construction ... 2
  2. Hydraulics and Hydraulics laboratory treated suitably for Mechanical and Electrical engineering ... 3
  3. Motive power engineering and laboratory (advanced) ... 5
  4. Electrical engineering and laboratory (advanced) ... 5
  5. Engineering drawing ... 4
- Workshop practice—Three periods ( $2\frac{1}{2}$  hours) per week in machine shop.
- Attendance at the Dacca Electric Supply Company Power House and Works, three morning periods (of  $2\frac{1}{2}$  hours) per week.

## 4th Year Course.

## CIVIL ENGINEERING.

*Specialist courses by professional Engineers in the undernoted branches.*

1. Railway and Roads ... } Two of
  2. Irrigation and Canals ... } these
  3. Sanitary engineering and Water Supply. ... } subjects
  4. Municipal, District and Local Board Engineering. ... } only to be compulsory.
  5. Engineering accounts and Book-keeping ... 2
  6. Civil engineering drawing office and design ... 6
  7. Building construction (advanced) including principles of architecture ... 4
  8. Engineering costing and estimating advanced ... 2
  9. Civil Engineering laboratory advanced ... 3
- Workshop practice—Nil.
- Survey camp of six weeks (starting immediately after Pujah vacation) in mofussil field.

## MECHANICAL AND ELECTRICAL ENGINEERING.

*To be taken at Engineering School.*

1. Fuels and oils ... 1
  2. Motive power engineering and laboratory (final course) ... 6
  3. Electrical Engineering and laboratory (final course) ... 6
  4. Engineering drawing ... 4
  5. Mechanical and electrical costing and estimating ... 2
  6. Workshop practice—General workshop methods and management—3 periods (of  $2\frac{1}{2}$  hours) per week.
- Attendance at Dacca Electric Supply Company Power House and Works—3 morning periods (of  $2\frac{1}{2}$  hours) per week.

## Appendix 2.

**Paper suggested for the First Engineering and Final Engineering Examinations mentioned in paragraph No. 13 of the foregoing report.**

First Engineering Examination to be held at the end of two years.

*For Civil Engineering Course.*

Mathematics—pure	...	1 paper. C.
applied	...	1 paper. C.
Physics	...	2 papers. C.
Chemistry—one paper and one practical test	...	... C
Mechanics	...	1 paper. C.
Geology	...	1 paper. C.
Theory and design of structures (to include two questions involving graphic statics)	...	1 paper
Surveying and levelling	do	
Civil engineering drawing	do	

Marks should also accrue to the above examination for (i) Civil Engineering sessional drawings, (ii) workshop course marks, (iii) local field surveying work and drawings and (iv) laboratory course work.

*For Mechanical and Electrical Engineering Course.*

Mathematics pure	...	1 paper. C.
applied	...	1 paper. C.
Physics	...	2 papers. C.
Chemistry—one paper and one practical test	...	... C.
Mechanics	...	1 paper. C.
Thermodynamics	...	1 paper. C.
Motive power engineering	...	2 papers.
Electrical engineering	...	2 papers.
Engineering drawing	...	1 paper.

Marks should also accrue to the above examination for (i) sessional drawings, (ii) workshop course marks and (iii) laboratory course work.

Final Engineering examination for degree of Bachelor of Engineering.

*For Civil Engineering Course.*

Mathematics applied	...	1 paper. C.
Civil engineering (one general and two special papers)	...	3 papers.
Hydraulics	...	1 paper.
Materials and construction	...	1 paper.
Civil engineering drawing and design	...	1 paper.
Geodesy	...	1 paper.
Engineering costs and estimating	...	1 paper.

Marks should also accrue to the above examination for (i) sessional drawings, (ii) workshop practice marks, (iii) survey camp work and drawings, and (iv) laboratory course work.

*For Mechanical and Electrical Course.*

Mathematics applied	...	1 paper. C.
Motive power engineering	...	2 papers.
Electrical engineering	...	2 papers.
Hydraulics	...	1 paper.
Engineering drawing	...	1 paper.
Materials of construction	...	1 paper.

Marks should also accrue to the above examination for (i) workshop practice, (ii) work done and notes taken while in attendance at the Dacca Electric Supply Co. works and (iii) laboratory course work.



## APPENDIX XI.

### Report on the Institution of a B. Sc. Electro-Technics Course.

The general idea of this course is to give students such a technical training that they will be enabled at the conclusion of their training to obtain posts in which their technical knowledge will be of advantage. Such posts will be of two kinds : (a) posts as assistants in power stations, motor car firms, tramway firms and general electrical firms, (b) assistants in wireless stations. The technical knowledge that it is proposed to impart in this course will be of two types : (1) The technics of dynamos, motors, generators, alternating and direct current machines, electro-plating plants, etc. (2) The theoretical aspect and preliminary experimental work in connection with wireless work of various kinds. The following is a brief outline of the proposed course.

Length of Course—Three years.

Subjects of Instruction—Physics, Chemistry and Mathematics.

#### Mathematics.

As for the ordinary B. Sc. Degree, *i.e.*, 5 hours per week during the first two years.

#### Chemistry.

Two hours per week lectures and three hours per week practical work during the first two years.

#### Physics.

Five hours per week lectures during each of the three years together with nine hours a week practical work in the laboratories and the Engineering School during the first two years. During the last year the practical work will consist of four hours per day (including vacations) in the Power Station. For this work in the Power Station the students will be divided into six batches of four who will work as follows : Batch No. 1—12 to 4 A.M., Batch No. 2—4 A.M. to 8 A.M., etc. The periods will be changed throughout the year in order to enable the students to see the working of the station at all times of the day. This work will be under the supervision of the authorities of the Power Station and it is intended that before being granted the degree each student must obtain a certificate stating that he has regularly and satisfactorily attended this course.

#### Examination.

1. Mathematics for the ordinary degree at the end of the second year.
2. Chemistry—One paper in Inorganic Chemistry and a six hours practical examination at the end of the second year.
3. Physics—Two papers on Physics and two on Electro-Technics with an eighteen hours' practical examination, twelve of which shall be on the technical instruction given. This examination will be at the end of the third year.

#### Cost.

#### Initial.

It is proposed that the room which is at present occupied by the University Club shall be fitted up as a laboratory for experiments in connection with the wireless work to be done. To do this and to purchase the necessary apparatus would cost not more than Rs. 15,000. The estimate for the machinery in connection with the Electro-technics course at the Engineering School is Rs. 45,000, but it must be remembered that

this is to serve for the establishment of the non-University course as well as for the University one. If Government do not agree to the establishment of the non-University course it will be necessary to provide equipment in the laboratories of the University at a cost of Rs. 25,000 *plus* the cost of building another laboratory.

*Recurring.*

Staff :	One lecturer	250-25-400
	One demonstrator	150-25-250
	One reader	500-50-800

Apparatus, menial staff and contingencies Rs. 1,200 per annum.

Honorarium for Power station authorities at Rs. 100 per student per year Rs. 2,400 per annum.

If it is not possible for the University students to work at the Engineering School there will be a further recurring expenditure of Rs. 250-25-400 per month for an extra lecturer.

The expenditure is therefore as follows.

<i>Initial</i>	Rs. 15,000.
<i>Recurring</i>	Rs. 14,400 per annum rising to
	Rs. 21,000.

The above is based on the assumption that the Engineering School is equipped for an Electro-technics course and that the machinery and staff can be utilised for University practical work. If this is not the case the estimates will be as follows :—

*Initial* Rs. 40 000 *plus* cost of a building.

*Recurring* Rs. 17,400 rising to Rs. 25,800 per annum.

It is assumed throughout that there will be a maximum of 24 students in each year *i.e.*, 72 students in all and an outflow of 24 students per year.

CHAS. J. HENDERSON.

W. A. JENKINS.

A. N. SEN.

J. C. GHOSH.

L. M. DICKINS.

## APPENDIX XII.

### **Proposals regarding a Scheme for the Collaboration of the Dacca University and the Dacca School of Engineering in connection with a proposed new branch of the University Science Degree in Electro-technics.**

The following proposals deal only with the part to be undertaken by the authorities of the Dacca School of Engineering.

#### *1. General idea of Scheme.*

This scheme is designed to enable the Dacca University authorities to extend the utility of their science degree course so as to allow undergraduates in science to proceed to a special branch of the science degree in Electro-technics. The University would lay down in their own regulations the qualifications of students taking this special branch. The students would be in every sense University students but the part of the course undertaken by the Dacca School of Engineering would be self-contained and under the sole control of the School of Engineering authorities. It would probably be necessary to have a Joint Committee of the University and Engineering School authorities to deal with all common points of contact in connection with the course. These two authorities should be equally represented on such a Committee. The course would be arranged jointly by agreement of the two authorities and while the syllabus for University students would be prescribed by the University, the teaching would, in the school, be given by teachers of the school who might be made honorary teachers of the University (following the precedent established in the case of the Dacca Training College).

#### *2. Part to be taken by the Engineering School.*

It is intended that the part of the proposed course to be undertaken by the Engineering School should be mainly practical instruction in the laboratories with the addition perhaps of certain subjects in Engineering which the Engineering School is better fitted to undertake. But this question would be dealt with after report by the before-mentioned Joint Committee to the University and the Engineering School.

#### *3. Control of Scheme as regards each part.*

It will be obvious that the smooth working of such a scheme will be ensured only by a strict avoidance of dual control in either part. With that object in view it has therefore been proposed to keep the control of each part self-contained with the above mentioned Joint Committee as a connecting link.

#### *4. Additional staff required at Engineering School.*

At an informal meeting in this connection between representatives of the University and the Engineering School held on the 2nd August 1922, the following additional staff was considered necessary to undertake the part proposed to be taken by the Engineering School:—

- (i) One lecturer or assistant teacher on Rs. 200 monthly.
- (ii) One Mechanic on Rs. 75 monthly.
- (iii) One Electro-plating mistry on Rs. 100 monthly.
- (iv) Menial laboratory servant on Rs. 15 monthly.

In addition to the above it was proposed that the Principal, Assistant Principal and perhaps two selected officers of the senior staff of the Engineering School should be appointed honorary teachers of the University.

### 5. *Equipment.*

At the meeting mentioned in paragraph 4 above the equipment necessary to suit the part of this course to be undertaken by the Engineering School was discussed. This was found to be practically identical with the Electrical equipment necessary at the Engineering School for the proposed new non-university course in Mechanical and Electrical Engineering. All equipment necessary to undertake the Engineering School part of the University Electro-technics course is already included in the above mentioned scheme and does not therefore appear as Capital Expenditure for this scheme.

### 6. *Capital Expenditure.*

Since the part of the course to be undertaken by the Engineering School has been chosen to suit the equipment of that institution for its own courses no capital expenditure will be necessary at the Engineering School for this scheme.

### 7. *Recurring Expenditure.*

The annual recurring expenditure at the Engineering School necessary for that institution to carry on its part of the course is estimated as follows :—

			Rs.
(i) Staff as per paragraph 4	...	...	4,680
(ii) Laboratory materials, etc., for two batches of 24 students in each	...	...	500
Total recurring expenditure	...		<u>5,180</u>

As the staff mentioned in paragraph 4 should, in the ordinary course, be on progressive remuneration the above figure will only be correct for the first year.

All recurring expenditure on this account should be provided for direct by Government in the Engineering School budget.

### 8. *Possible date of starting of proposed course.*

Since the Engineering School cannot undertake this proposed scheme unless and until the non-university course in Mechanical and Electrical Engineering already proposed is started at that institution the earliest date will correspond with the starting date of the latter course and that cannot conveniently be earlier than the beginning of July 1923.

CHAS. J. HENDERSON.

W. A. JENKINS.

A. N. SEN.

J. C. GHOSH.

L. M. DICKINS.

## APPENDIX XIII.

**Estimate of Expenditure for the Chemical Technology  
Department.**

**Abstract.**

	Rs.	Rs.
Initial Recurring Expenditure per year ...		29,000
Capital Expenditure ...		1,32,000
Building (utilising the Power House) ...	12,000	
Equipment ...	1,00,000	
Erection, Electric Installation, Furni- ture, etc. ...	20,000	
Total Capital Expenditure ...	<u>1,32,000</u>	

**Details.**

*Recurring Expenditure.*

1. Staff ...	23,000
A Reader in Mechanical Engineering ...	600
An Upper Subordinate Assistant ...	100
One Bearer ...	13
A Professor or Reader in Applied Chemistry who should have specia- lised in the technology of Oils and Fats (initial salary 600—800 according to qualifications) ...	600
One Foreman mechanic having actual experience in Soap works ...	250
Two Mistrys at Rs. 30 each ...	60
One senior Mistry ...	75
One Demonstrator in Chemistry for the Chemical Laboratory attached to the technological workshop ...	150
Two Bearers and one Daywan ...	39
Total Monthly Expenses ...	<u>1,887</u>
Recurring initial annual expenditure on staff ...	22,644
Say ...	23,000
2. *Recurring expenses for materials, etc. ...	6,000
Total initial recurring expenses per year ...	<u>29,000</u>

\* We have consulted Prof. H. K. Sen, D.Sc., who is in charge of the applied chemistry laboratory of the University of Calcutta, and he considers that a sum of Rs. 6,000 per year (for materials, repairs, etc.) would meet the reasonable needs of this department.—J. C. Ghosh.

*Accommodation and building.*

A Drawing Hall and a Model Storage Room 40' x 20'. It could be accommodated in the proposed extensions to the Chemical Laboratory ; for the present a suitable room in the main University Buildings might be utilised.

*Technological workshop.*

The disused Power House in the Dacca Hall compound would be quite suitable for the purpose. Only slight alterations would be needed, and two store rooms have got to be added. Repairs, additions and alterations would cost about Rs. 12,000.

	Rs.
Cost of building and repairs ... ..	12,000

*Technological workshop Equipment.*

Since a specialised post-graduate course in the technology of oils, fats and soaps has got to be provided, the units of plants for the technical process room should be purchased with special reference to the needs of these industries. A decent start can be made with the following :—

A, B, C, D, E and F and some plants included in G.

*A*

	Rs.
(1) One Lancashire Boiler 24' x 6' to include a water softening plant and superheater to produce steam up to 300°c ... ..	15,000
(2) Steam-Engine—15 H. P. ... ..	3,500
Oil Engine—10 H. P. ... ..	2,500
(3) Air Compressor—60 c. ft. of air per minute at 100 lbs. pressure with receiver ... ..	2,300

*B*

Disintegrator No. 1½ by Christie and Harris, Ball Mill, Egde Runner, Ore Crusher and Small Oil Press (hydraulic) ...	2,000
--	-------

*C*

A Maxted Thompson plant for the Catalytic Hydrogenation of Oils and Fats and for the manufacture of pure Hydrogen (an experimental plant of this type has been supplied to the Bangalore Institute) ... ..	15,000
--	--------

*It includes—*

- (1) Maxted Patent Oil Hardening Vessel.
- (2) Oil Preheating tank.
- (3) Hydrogen Dryer.
- (4) Compressor.
- (5) Oil Circulating Pump.
- (6) Gas Circulating Pump.
- (7) Finished oil Tank.
- (8) Filter pump.
- (9) Oil filtering system.
- (10) Mixing and precipitating tanks.
- (11) Filter press.

- (12) Portable drying system.
- (13) Grinder.
- (14) Reducing system with pyrometer attachment.
- (15) Oil tank.
- (16) Gas producer for Hydrogen.
- (17) Scrubber tower.
- (18) Gas holder.
- (19) Purifier.
- (20) Reducing gas booster.
- (21) Hydrogen furnace.
- (22) Condensing chamber.
- (23) Gas purifier.
- (24) Storage holder.

## D

Simple laboratory apparatus for determining the physical properties of oil :—

- |                                     |     |     |             |
|-------------------------------------|-----|-----|-------------|
| (1) Viscosimeter                    | ... | ... | } Rs. 2,000 |
| (2) Flash point apparatus           | ... | ... |             |
| (3) Specific gravity apparatus, etc | ... | ... |             |

## E

A complete Experimental Soap Plant  
(Specifications as per Schrauth's Hand-  
buch der Seifen-Fabrikation) ... Rs. 9,000

It includes—

- (1) Storage tank for oil.
- (2) Tank with agitator for dissolving soda.
- (3) "Oil-bleich apparat."
- (4) "Siede-kessel" for direct steam.
- (5) Pump and storage cooler vessels.
- (6) Piece cutting machine.
- (7) Soap stamping machine.
- (8) Plodding machine, etc., etc.

## F

A central vacuum plant with which  
a Glycerine plant should be associated to be  
located in the Still House ... Rs. 5,000

## G

For the Technical Process Room, besides the soap boiler tank, the following units of plants\* should be fitted up :—

- (1) One vacuum drying plant.
- (2) One Autoclave.
- (3) One Nitrator.
- (4) One Reducing Pan.
- (5) One Sulphonator.

\* The units of plants might be of the same size as in the Imperial College of Science and Technology, London.

- (6) One Still with Young's column.
- (7) One Hydro-extractor.
- (8) One Melt Pan.
- (9) One Unit Heater.
- (10) Two M. S. Receivers.
- (11) One Wood Filter Press.
- (12) One Rotary Crystalliser with

Electromotors, etc., etc.

Approximate total cost ... Rs. 40,000

All these unit plants need not be purchased at once. They may be added on year by year as funds permit.

(a) Minor apparatus and miscellaneous Rs. 3,700

Grand Total ... Rs. 1,00,000

*Furniture and Fittings.*

Furniture ... Rs. 2,000

Pipe fittings, erection, water tank,  
pump for water, electric fittings,  
etc. ... Rs. 18,000

Total for fittings and furniture ... Rs. 20,000



## APPENDIX XIV.

**Scheme for the Department of Leather Technology at the University of Dacca.**

[By Mr. B. M. Das, M. A., M. Sc., Superintendent of the Government Research Tannery, Calcutta].

**Object.**—Although the very ancient tanners' art had for centuries been conducted by traditional rule of thumb methods, the efforts of scientists during the last quarter of a century have transformed tanning into a highly developed branch of modern applied science. Chemical, physical and bacteriological sciences have been harnessed to its service and mechanical and electrical engineering has supplied it with many labour-saving machinery without which it would be impossible for a tanner to stand in modern competition. Manufacture of the present-day commercial leathers—there are innumerable varieties—demands the co-operation of the leather chemist, the practical tanner, the tanners' engineer, the experienced foreman and of the skilled manual and machine worker.

As yet, not only in Bengal but all over India there is a great dearth of these technically-trained men necessary for the tanning industry. It may be asked if there be a demand in the country for them. The question may be answered in the affirmative with some limitation. The tanning industry is still in the process of development in the country; tanneries using modern methods are as yet limited. One of the reasons of the slow development of tanning industry is the dearth of sufficient technical knowledge in the country. Indian raw material is extensively turned into commercial leather in the West by western skill and knowledge. The leather sells well in the world's markets. Had there been the knowledge and experience for turning out similar goods in India from local materials, those would have sold in the world's markets and a thriving industry in the country would have been the result. The raw material is there, the market for the leather is also there, technical knowledge and investment of capital in tanning are what are needed.

The former will inspire the latter. To ask capitalists to invest money in an industry for the efficient conduct of which proper men are lacking, would be more or less putting the cart before the horse.

With a view to train such technical men the starting of a department for leather industries at the Dacca University would be of great utility. The aims of the department should mainly be the training of two classes of men—(1) leather chemists, (2) foreman tanners. Recruits for the former should better be the science graduates and undergraduates and for the latter the matriculates.

Training will have to be imparted by lectures and practical work at the laboratory and the tannery both of which will have to be provided for. Keeping these objects in view the following scheme is drawn up :—

## Scheme.

## Subjects to be taught—

## (1) Auxiliary subjects—

- (a) Chemistry,
- (b) Physics,
- (c) Elementary Bacteriology,
- (d) Elementary Botany,
- (e) Elementary Mechanical Engineering, and
- (f) Book-keeping and Accounts.

## (2) Main subjects—

- (a) Methods of leather manufacture,
- (b) Applied science of leather manufacture, and
- (c) Analytical chemistry of leather manufacture.

*Teaching of the subjects.*—It is understood that the teaching of the auxiliary subjects—Chemistry, Physics, Botany, Mechanical Engineering and Book-keeping and Accounts may be arranged with the staff and the accommodation already existing at the University.

Provisions would have to be made for Bacteriology and the main subjects.

*Courses of study.*

- (1) M. Sc. course in Leather Technology.
- (2) B. Sc.       "       "       "
- (3) Diploma   "       "       "
- (4) Special     "       "       "

*Periods of courses.*

- (1) M. Sc. course of—one year after B. Sc. (Leather).
- (2) B. Sc. course of—three years after Intermediate in Science or two years after B. Sc. (General).
- (3) Diploma course of three years after Matriculation.
- (4) Special course of six months (minimum).

*Schemes of study.*

- (1) *M. Sc. course*—One year after B.Sc. (Leather). Research work, to be done at the leather laboratory.
- (2) *B. Sc. (Leather) course for three years.*

**1st year.***For I. Sc. passed students only.*

- (a) General course of Chemistry, both lecture and laboratory work, with B. Sc. (General) 1st year students.
- (b) General course of Physics, both lecture and laboratory work, with B. Sc. (General) 1st year students.
- (c) Practical work at the Demonstration tannery.

**2nd year.***For I. Sc. and B. Sc. (General).*

- (a) General Physics \*
- and
- (b) General Chemistry\*  
(Courses to be completed).
- (c) Elementary Botany.
- (d)       "       Bacteriology.
- (e)       "       Mechanical Engineering.
- (f) Book-keeping and Accounts.
- (g) Lectures on Methods of Leather Manufacture.
- (h) Practical work at the Demonstration Tannery †

\* For I. Sc. passed students only. Courses to be attended with the students of the B. Sc. (General) second year class.

† For B. Sc. (General) passed students only.

**3rd year.***For I. Sc. and B. Sc. (General).*

- (a) Bacteriological work.
- (b) Lectures on Applied Science of Leather Manufacture.
- (c) Lectures on Analytical Chemistry of Leather Manufacture.
- (d) Production of various commercial leather at the Demonstration tannery.

**(3) Diploma course for three years.****1st year.**

- (a) General Chemistry.

(I. Sc. standard) both laboratory work and lectures. Qualitative analysis to be completed.

- (b) Practical work (manual and machine) at the Demonstration tannery.
- (c) Lectures and practical work at the Engineering workshop.

**2nd year.**

- (a) General Chemistry—Lectures (I. Sc. standard) to be completed. Quantitative and volumetric analysis to be completed.
- (b) Lectures on Elementary Bacteriology.
- (c) Book-keeping and Accounts to be completed.
- (d) Work at the Demonstration tannery.
- (e) Lectures on the methods of leather manufacture.

**3rd year.**

- (a) Leather laboratory work.
- (b) Lectures on the Applied Science of Leather Manufacture and Analytical Chemistry of Leather Manufacture.
- (c) Production of various commercial leathers at the Demonstration tannery.

*Number of students to be admitted.*

It is proposed that 12 students for the degree course and 8 for the diploma course will be admitted every year for which the following accommodation and staff will be required :—

Accommodation—One lecture hall for lectures on the main subject for 30 students.

Leather laboratory for 30 students.

Bacteriological laboratory for 30 students.

Demonstration tannery—Besides accommodating all the required equipment in machinery and pits, it should be also sufficiently roomy to allow 60 students to work at a time.

*Staff.*

1 Professor of the Leather Department.

1 Tanner.

1 Reader on Bacteriology.

1 Leather Chemist.

1 Mechanic.

1 Head Clerk and Accountant.

1 Store-keeper.

Menial staff—Durwans, sweepers, boys, orderlies, peons, tannery workmen, etc.

## ESTIMATES—ABSTRACT OF.

## Capital in block—

				Ra.
(i) Land (free) ...	...	...	...	
(ii) Buildings (Appendices A and B)	...	...	...	1,09,680
(iii) Equipment (Appendices C and D)	...	...	...	56,505
Total	...	...	...	1,66,185

## Annual recurring expenditure—

Establishment ...	...	...	...	30,000
Contingencies ...	...	...	...	23,500
Total	...	...	...	53,500

Receipts	...	...	...	19,000
----------	-----	-----	-----	--------

## ESTIMATES.

## Capital expenditure—

Lands—Understood to be had free from the University.

Buildings—Tannery shed as per details in Appendix A.

Floor space ...	...	...	229' × 40' = 9,160 s. ft
Bark store and disintegrator room of floor space ...	...	...	72' × 15' = 1,080 "
Total	...	...	10,240 s. ft.

Ra.

A corrugated iron shed with corrugated iron wall and brick-on-edge floor would be the cheapest. This estimated at Rs. 4-8 per sq. ft. of covered space ...	46,000
If it be desired to construct it in all bricks it will cost at Rs. 8 per sq. ft. ...	81,000
Leather laboratory and lecture hall, etc., as per details in Appendix B, floor space 325' × 20' = 6,500 sq. ft. It will be better to make it an all-brick building : cost at Rs. 8 per sq. ft. ...	52,000
Verandah 325' × 8', at Rs. 4 ...	10,400

## Annual recurring expenditure—

## Establishment—

	Ra.
1 Professor of leather department ...	800—50—1,800
1 Tanner ...	500—25— 750
1 Reader on Bacteriology ...	250—25— 500
1 Leather chemist ...	250—25— 500
1 Mechanic ...	100—10— 150
1 Head clerk and accountant ...	100—10— 150
1 Store-keeper ...	50— 5— 75
Menial staff : durwans, sweepers, boys, orderlies, peons, workmen, etc. ...	450 (monthly). 30,000

**Contingencies—**

	Rs.
(a) Hides and skins ...	12,000
(b) Treatment materials ...	5,000
(c) Stores ...	4,000
(d) Miscellaneous ...	2,500
	<hr/> 23,500 (annual).
Total recurring expenditure	<hr/> 53,500 <hr/>

**Receipts—**

	Rs.
Estimated annual income from the sale of leathers and fees from students ...	19,000
	Rs.
Sale proceeds of leathers ...	12,000
Fees from students—24	
Diploma students at Rs. 8	
each a month ...	2,304 (annual).
36 Degree students at Rs. 12	
each a month ...	5,184 ( " ).
Total income from fees	<hr/> 7,488 (annual). <hr/>

## APPENDIX A.

**Demonstration Tannery.**

(Total floor 10,240 sq. ft.).

Lime yard	..	...	...	1,100 sq. ft.
Tan yard	...	...	...	2,600 "
Machine yard	...	...	...	2,160 "
Drying room	...	...	...	800 "
Bark shed	...	...	...	780 "
Disintegrator shed	...	...	...	300 "
Stores (Hide, Lime and Chemicals)	...	...	...	1,100 "
Office room	...	..	...	300 "
Open space	...	...	...	800 "
Total floor				10,240 sq. ft. space

A corrugated iron shed with corrugated iron wall and brick-on-edge floor would be the cheapest. Estimated at Rs. 4-8 per sq. ft. of covered space the cost amounts to Rs. 46,080.

If it be desired to construct it in all bricks the estimate of cost at Rs. 8 per sq. ft. of covered area would amount to Rs. 81,920.

*Boiler shed*—20' × 20' = 400 sq. ft. of corrugated iron shed with corrugated iron wall at Rs. 3 per sq. ft. of covered space = Rs. 1,200.

## APPENDIX B.

**Laboratory and Lecture Halls, etc.****Leather Laboratory—**

Fitted with working benches for 36 students. Eight double benches and two single benches on either side of the room.

Suitable size of a double bench—8' × 5', and of single bench—8' × 2½', about 5½' space to be kept between the benches.

Total floor space required ... 100' × 20' = 2,000 sq. ft.

Research Laboratory fitted with two double (8 people) benches	...	...	30' × 20' = 600 sq. ft.
Bacteriological laboratory	...	...	30' × 20' = 600 "
Balance room	...	...	20' × 20' = 400 "
Chemist's room	...	...	10' × 20' = 200 "
Chemical and apparatus store room	...	...	30' × 20' = 600 "
Library and Museum	...	...	30' × 20' = 600 "
Lecture Hall	...	...	30' × 20' = 600 "
Professor's room	...	...	20' × 20' = 400 "
Bathroom	...	...	10' × 20' = 200 "
Office room	...	...	15' × 20' = 300 "
Total ... 325' × 20' = 6,500 "			

Rs.

Of all brick construction at Rs. 8 ... 52,000  
 A verandah with tiled room 325' × 8' = 2,600 sq. ft. at Rs. 4 10,400

## APPENDIX C.

**Equipment of the Tannery.***Liming and deliming yard—*

				Rs.
8 pits 6' x 5' x 4' at Rs. 35	...	...	...	280
5 " 3' x 3' x 3' " " 25	...	...	...	125
Total				405

*Bark tanning yard—*

## Press leaches—

A battery of 6 pits each of size 6' x 5' x 7' at Rs. 60	...	360
6 suspender pits each of size 6' x 4' x 7' at Rs. 40	...	240
6 handler pits each of size 6' x 5' x 4' at Rs. 35	...	210
5 layer pits each of size 6' x 5' x 4' at Rs. 35	...	210
8 small pits for skins, each of size 3' x 3' x 3' at Rs. 20	...	160
Total	...	1,180

*Chrome tanning yard—*

2 chrome tanning pits for tanning by suspension in pits, each of size 6' x 4' x 7' at Rs. 40	...	80
2 chrome tanning handler pits of size 6' x 4' x 4' at Rs. 35	...	70
2 drums 6' x 4' at Rs. 1,000	...	2,000
2 smaller drums 4' x 3' at Rs. 500	...	1,000
2 small paddles for skins 4' x 3' x 2' at Rs. 400	...	800
<b>Total</b>	...	<b>3,950</b>

*Mechanic yard—*

1 Carter's disintegrator for crushing vegetable tanstuffs	...	1,200
Its fitting, etc.	...	800
1 shaving machine	...	2,500
1 glazing do.	...	2,000
1 staking do.	...	2,500
1 sole rolling machine	...	2,000
1 areometer	...	200
Line shafting, plumber blocks, brackets, etc.	...	2,000
		<hr/>
Total	...	13,200

*Power plant, etc.—*

A 20 horse power oil engine	...	...	5,000
Cooling tanks	...	...	1,000
A small vertical boiler	...	...	2,000
2 pumps	...	...	1,200
Total			9,200

*Water storage tank—*

Of 2,500 gallons capacity on a staging about 15 feet high	2,000
Water and steam and electric fittings inside the tannery ...	1,000
	<hr/>
Total ...	3,000
	<hr/>
Tools and furniture ... ..	1,500

## APPENDIX D.

**Chemical Laboratory—Equipment of.**

The Research laboratory should be equipped with—

(i) Two double working benches 8' x 5' x 3' and one single 8' x 2½' x 3' with drawers, cupboards, racks and draining boards, etc.	Rs.
...	1,000
(ii) One rectangular table 8' x 2½' x 3'	50
(iii) One fume cupboard 3' x 2' with lead-lined door	150
(iv) One reagent rack 6' x 1' x 6' with counterpoised glass sliding doors, lower portion made as cupboard	180

Balance room should be equipped with—

Ten marble shelves 2½' x 1½' for balance and four stout tables for dessicators	600
Ten stools	100

The general laboratory should be equipped with—

Eight double benches 8' x 5' x 3', two single benches 8' x 2½' x 3' with drawers, cupboards, reagent racks, draining boards, etc.	3,600
Two rectangular tables 8' x 2½' x 3'	100
Five fume cupboards 3' x 2' lead-lined bottom, asbestos back and top, and glass sliding door	600
Five reagent racks 6' x 1' x 6' with counterpoised glass sliding doors, lower portion made as cupboard	750
One glass blowing table 3½' x 2½' x 3' with asbestos lined top	50

Bacteriological laboratory should be equipped with—

One bench 16' x 5' with cupboards, etc., complete	800
Two single benches with cupboards, etc., complete	400

Gas and water fittings for the laboratories with—

Covered drains	5,000
Furniture—tables, stools, chairs, etc.	1,000

Special apparatus and chemicals required initially—

Two Procter's extractors with four holes	100
Two shaking machines to accommodate 6 bottles each	100
One vacuum evaporator	160
One Lovibond's tintometer for tannin analysis	300
50 lbs. standard hide powder approved by the Society of Leather Trades Chemists	1,250
Chromium sesquichloride 30 bottles (100 grms. each for tannin analysis)	130
Ten boxes J. Green's 605 hand-made folded filter paper (18.5 cm.)	500
Berkefeld's filter candles (for tannin analysis 18 x 19 mm - 10 doz.)	150
Six chemical balances (sensitive up to 1/10th of a milligram)	3,000
Four rough balances for ordinary work	200
Two microscopes	1,200
One refractometer	300
One microtome	300
Sundry reagents	2,000

Total ... **24,070**



## APPENDIX XV.

**Cost of erection and equipment of Botanical Laboratory.**

**Extract from Dr. Hector's letter dated the 28th July 1922, addressed to the Chairman of the Committee.**

\* \* \* \* \*

The building should be one storey, and consist of a lecture-room to accommodate about 30 students, office and library combined, general laboratory (with store room), physiology laboratory (with store-room) a small research laboratory (for advanced students and professor), herbarium and dark room. The large laboratories should be approximately 42' square and should accommodate 20 to 25 students comfortably, 4 at each window-bench and 4 at each work-table. I do not think they could be much reduced. The herbarium would be a long, narrow room with plenty of wall space for herbarium cabinets, which is what is wanted. Such a building, the plinth area being roughly 184' x 57', will cost, I am told, about Rs. 46,000 kutchu-pucca.

**Extract from Dr. Hector's letter dated 31st October 1922, addressed to the Chairman of the Committee.**

I enclose herewith rough estimates for equipping the botanical laboratory of which I sent you plans on 28th July last.

The estimate is an outside one and provides (1) for fitting the proposed laboratory and (2) for providing it with the necessary equipment (excluding chemicals) required at the outset for starting classes of about 20 students.

The estimates in question come to approximately Rs. 30,150 and Rs. 25,220, or roughly Rs. 55,000.

The building came to Rs. 46,000, so that the whole comes to Rs. 1,01,999. As in addition to this chemicals will be required and a certain expenditure on laying out the botanical garden, the necessary grant will probably not be far short of Rs. 1,10,000. Also a recurring grant will be necessary, the amount of which will largely depend on the number of students.

**Estimate for fitting the proposed Botanical Laboratory.**

	Rs.
Sinks 50 at Rs. 40 ... ..	2,000
Gas taps 50 at Rs. 5 ... ..	250
Water taps 50 at Rs. 5 ... ..	250
Work tables 30 at Rs. 100 ... ..	3,000
Wall benches 5 at Rs. 400 ... ..	2,000
Wall cabinets 225 ft. at Rs. 10 per ft. ... ..	2,250
Stink cupboards 3 at Rs. 500 ... ..	1,500
Herbarium table 1 at Rs. 400 ... ..	400
Plumbing (for gas and water) ... ..	8,500
Miscellaneous (Darkroom fittings, lecture-room fittings, etc.) ... ..	5,000
Contingent and unforeseen ... ..	5,000
<b>Total</b> ... ..	<b>30,150 or</b>
	<b>Rs. 30,000 (excluding electric fittings.)</b>

**Estimate for preliminary apparatus grant (excluding chemicals).**

	£.	s.
1. 25 Cheap microscopes, Small Leitz—2 objectives and 1 eyepiece—each approx. £ 12	300	0
2. 30 Bell Jars—each 9 s.	13	10
3. Two Research Microscopes, £ 50 each	100	0
4. Two Microtomes (Cambridge Rocking), £ 6 each	12	0
5. Three embedding baths, £ 5-10 each	16	10
6. One oven, £ 15-10 each	15	10
7. Twenty large dessicators, 24 s. each	14	8
8. Twenty-five teak stands with bottles for reagents £ 2-5 each	56	5
9. Two Incubators, £ 40-10 each	81	0
10. One Steriliser, £ 19-10 each	19	10
11. One Autoclave, £ 64	64	0
12. Three Chemical Balances, £ 4, £ 7, £ 30	41	0
13. Three Aspirators (15 litres), 50 s. each	7	10
14. Twelve Balsam bottles	19	6
15. One hundred watch glasses, 2 s. per doz.	0	16
16. One hundred Petri dishes 24 s. per doz.	12	0
17. Half gross microscope slides, 15 s. per box, 6 boxes	4	10
18. Cover glasses (Round $\frac{3}{4}$ " diam.) 6-6 d. per oz.	3	9
19. Three doz. scalpels, 4 s. each	7	4
20. One doz. dissecting scissors	2	0
21. One hundred needles, 3-6 d. per doz.	1	8
22. Two dissecting microscopes, approximately	10	0
23. One complete set Ganong's physiological apparatus, approximately	800	0
<b>Total</b>	<b>1,601</b>	<b>16</b>

or Rs. 24,000 at Rs. 15 per £ approximately.

## APPENDIX XVI.

## Estimates for a Bacteriological Laboratory.

				£.	s.	d.
1. Equipment—						
1	Microscope for Teacher	...	...	60	0	0
1	Ditto for Demonstrator	...	...	50	0	0
20	Ditto for students at £ 35 each	...	...	700	0	0
1	Incubator	...	...	20	0	0
1	Autoclave	...	...	20	0	0
12	Wire baskets	...	...	2	10	0
3	Test tube stands	...	...	1	10	0
24	Copper stands for needles	...	...	2	6	0
24	Staining dishes	...	...	0	5	6
24	Teak stands for stains fitted with jars and bottles	...	...	54	0	0
24	Drop bottles (chopping)	...	...	0	14	0
4	Dozen Petri dishes of sizes	...	...	6	0	0
6	Media jars	...	...	2	0	0
1	Centrifuge	...	...	18	0	0
24	Section lifters	...	...	0	17	0
24	Forceps	...	...	1	8	6
1	Embedding bath	...	...	8	5	0
24	Needle holders	...	...	1	8	0
24	Platinum needle holders	...	...	1	10	0
24	Scissors	...	...	2	0	0
1	Microtome	...	...	8	2	0
1	Chemical Balance	...	...	12	15	0
1	Set weights	...	...	2	5	0
4	Dozen flasks of sizes	...	...	4	0	0
24	Bunsen burners	...	...	2	5	0
	Test tubes, glass slides, cover slips, stains and miscellaneous articles	...	...	50	0	0
	Total	...	...	1,032	1	0
					Rs.	A.
	Equivalent to	...	...	15,480	12	
	Say	...	...	15,500	0	
2. Approximate cost of building with fittings and furniture				20,000	0	
	Total	...	...	35,500	0	

## APPENDIX XVII.

**Extract from Report of Sub-Committee on Commerce relating  
to University Education in Commerce.**

Of the part-time lecturers mentioned in this scheme, the services of the lecturer in Commercial Correspondence may be shared with the English Department, while the services of the lecturer in Statistics may be shared with the departments of Experimental Psychology and Economics.

*I.—Capital Expenditure.*

	Rs.
1. Library ... ..	3,500 <sup>*</sup>
2. Dummy forms, ledgers, etc. ... ..	500
3. Typewriters, etc. ... ..	5,000
<b>Total Capital Expenditure</b> ... ..	<b>9,000</b>

*II.—Recurring Expenditure (on additional staff etc.).*

	Initial salary per month.	Initial salary per annum.
	Rs.	Rs.
<b>1. Staff—</b>		
1 Reader in Accountancy, Auditing and Business Organisation <sup>*</sup> ... ..	400	4,800
1 Lecturer in Commercial Geography and Trade† ... ..	250	3,000
1 Lecturer in Banking, Currency, Money Market and Banking Law† ... ..	250	3,000
1 Lecturer in Principles of Economics, Economic History and Public Finance ... ..	250	3,000
1 Part-time Lecturer in Statistics (share of cost) ... ..	...	1,000
1 Part-time Lecturer in Commercial Correspondence (share of cost) ... ..	...	1,000
1 Research Scholar to study and specialise in the organisation of the jute and hide trades of East Bengal ... ..	100	1,200
1 Shorthand and Typewriting Instructor ... ..	150	1,800
	<hr/>	<hr/>
<b>Initial recurring expenditure per annum on additional staff</b> ... ..		<b>8,000</b>
<b>2. Library (recurring grant)</b> ... ..	...	400
<b>3. Typewriting materials, repairs, etc.</b> ... ..	...	240
	<hr/>	<hr/>
<b>Total initial recurring expenditure per annum</b> ... ..		<b>8,640</b>

<sup>\*</sup> This has been provided already by the University.

† These teachers have already been appointed by the University.

## APPENDIX XVIII.

**Report of the Sub-Committee on Medical Education.**

1. The Sub-Committee for Medical Education was constituted in accordance with the following two resolutions adopted at a meeting of the General Committee held on Tuesday, the 31st October 1922 :—

Resolution No. 3—That the Sub-Committee for Medical Education consist of (1) Mr. P. J. Hartog, (2) the Civil Surgeon, Dacca, (3) Dr. R. C. Roy, (4) Dr. S. K. Das Gupta, (5) Prof. J. C. Ghose and (6) Prof. W. A. Jenkins, with powers to co-opt other members.

Resolution No. 4—That Mr. P. J. Hartog be the Chairman of the Medical Sub-Committee.

2. In accordance with the powers conferred on them they have co-opted the following gentlemen :—

(1) Major N. S. Simpson, (2) Rai Baroda Sankar Bhattacharyya Bahadur, (3) Dr. A. K. Sarkar, (4) Dr. S. C. Gupta.

3. The Sub-Committee have met four times, viz., on the 19th November and 6th December, 1922, and 17th and 29th January, 1923, the attendances at which were 4, 4, 7 and 5, respectively.

4. The Sub-Committee have taken into consideration the following passage from the resolution of the Government of Bengal referring to medical education in connection with the University of Dacca :—

(5) There remains the question of providing a suitable course of engineering and medical education in connection with the University of Dacca. The development of these departments is essential for the complete organisation of the University, but, owing to the heavy cost which it will entail, it is doubtful whether much can be done in this direction now. There is, however, the possibility of expanding the Dacca Engineering School so as to provide not only for a degree course, but also for a training in such subjects as railway, mechanical and electrical engineering, and this question will be taken into consideration. The provision of higher medical training is a matter of greater difficulty. There is of course the Medical School in Dacca which may be improved, but Government has at present no intention of raising it to a higher status. Any scheme for the establishment of a Medical College in connection with the University will therefore have to be prepared independently of the existing institution.

5. The Sub-Committee have considered and approved the rough estimates submitted by Colonel Mackelvie, Civil Surgeon, Dacca. (For text of the estimates see Appendix A.) They have not gone into details because it would appear that in the present circumstances it is improbable that the funds required could be raised for some time. The Sub-Committee are of opinion that it is essential for the success of a University Faculty of Medicine that a hospital of not less than 200 beds together with an out-patient department, etc., should be provided, and they are of opinion that there is no certainty that even if such a hospital were established there would be clinical material available of sufficiently varied character to provide the proper medical education of the University students, taking into account the existence of the present Mitford Hospital which would remain attached to the Dacca Medical School.

P. J. HARTOG.

N. S. SIMPSON.

AKSHAY KUMAR SARKAR.

M. MACKELVIE.

W. A. JENKINS.

SURESH CHANDRA GUPTA.

BARADA SANKAR BHATTACHARYYA.

## APPENDIX A

# Rough Estimate of cost of Medical College and Hospital at Dacca.

(BY LIEUT.-COL. MACKELVIE, I.M.S., C.I.E.)

I. College—		Rs.	Details of staff.	Rs.	
(a) Recurring charges—					
Teaching staff	...	2,70,000	Principal	...	2,250
Clerical and Administrative staff	...	5,000	3 I. M. S. Professors	...	4,800
Menial staff	...	4,000	3 Non-I. M. S. Professors	...	4,500
Contingencies	...	40,000	4 Readers	...	3,200
Hostel supervision	...	2,000	1 Lecturer	...	300
Total	...	3,21,000	10 Assistant Professors	...	4,000
			11 Demonstrators	...	2,200
			Allowance to 5 Professors debarred practice	...	1,500
(b) Buildings and equipment	...	10,00,000	Total	...	22,750
Hostels	...	3,00,000			
Total	...	13,00,000	Nursing staff.		
II. Hospital—			1 Lady Superintendent	...	350
(a) Recurring charges—			3 Deputy Superintendents	...	750
Deputy Principal	...	6,600	1 Home Matron	...	200
Nursing staff	...	43,800	7 Staff Nurses	...	700
Clerical staff (with allowance—Typist and Accountant)	...	3,630	33 Nurses	...	1,650
Compounders	...	2,520	Total	...	3,650
Menial establishment	...	10,400	Buildings.		
Recurring Hospital Expenditure	...	80,000	Male Block	...	1,80,000
Total	...	1,46,950	Female and Children	...	1,00,000
(b) Buildings and equipment	...	13,00,000	Obstetric and Gynaecological	...	50,000
			Infectious Diseases	...	40,000
			Out-patient Department	...	1,00,000
			Kitchen and Stores	...	20,000
			European Block and Out-houses	...	50,000
			Administrative	...	60,000
			Total	...	6,00,000
			Nurses' Home	...	1,00,000
			Servants' Quarters	...	50,000
			Cottage Wards	...	50,000
			Laundry and Dhobi Ghat	...	7,000
			Fencing, roads and gate	...	25,000
			Principal's houses	...	50,000
			3 Resident Medical Officers' houses	...	75,000
			5 House staff	...	35,000
			Water installation	...	40,000
			Electric	...	50,000
			Equipment	...	1,50,000
			Furniture	...	50,000
			Land	...	?
			Total	...	12,82,000

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## EDUCATION DEPARTMENT.

Education,

RESOLUTION—No. 1231Edn.

CALCUTTA, THE 22ND MARCH 1926.

READ—

The Interim and the Final Reports of the Dacca Technical and Vocational Education Committee.

In July 1922, the Government of Bengal appointed a Committee to advise on the question of the introduction of technical and vocational education in the schools and colleges of this Presidency. The resolution appointing the Committee emphasised the fact that the purely literary education, so long imparted, no longer offers the chance of a decent livelihood to the young men of this country, and that the demand for a system which will hold out better prospects has in consequence grown more and more insistent. The schemes to be evolved by the Committee were, when fully developed, to be introduced in the educational institutions of Dacca in the first instance and, if successful, were to be extended to other parts of the province.

2. The Committee submitted their report in January 1924. In discharging the task entrusted to them the Committee have proceeded from the standpoint that it would be useless to offer vocational education for vocations that do not exist or that are not likely to be created in Bengal. Their report deals separately with the subjects to be taught in the various classes of institutions. The Committee's recommendations have been carefully considered by Government and the decision arrived at in respect of each recommendation is indicated below. The Governor in Council takes this opportunity of recording his high appreciation of the manner in which Dr. P. J. Hartog (now Sir Philip Hartog) and his colleagues have investigated this intricate problem and of the exceedingly valuable report which they have presented.

3. **High Schools and Madrasahs.**—In the resolution appointing the Committee it was recognised by Government that, so far as secondary schools are concerned, all that could be attempted was to give a bias towards practical education and that, while the training of the hand and eye would be the main object to be kept in view, advantage would be taken of the course followed in the manual training classes to teach a boy a definite craft likely to prove useful to him in after life, whether he took up a University career or not. Thus while the Committee had to consider vocational education in its true sense in connection with intermediate colleges and the University, they had to consider only a preliminary hand and eye training in the schools. Their recommendations, so far as they relate to training in high schools and madrasahs, together with the views of Government thereon, are set forth in the following paragraphs.

4. The Committee recommend that drawing should be made compulsory in classes III and IV of high schools in which the ages of the boys vary from eight to ten years, but that boys who show no taste for drawing should not be forced to continue it in the higher classes. Probably the age of ten is too early to decide whether a boy has an aptitude for drawing or not; Government therefore consider drawing should be compulsory up to class VI and will bring this recommendation to the notice of the Board of Intermediate and Secondary Education, Dacca.

5. In the opinion of the Committee one of the obstacles in the way of manual employment among the middle classes in Bengal is physical weakness. They therefore recommend that, with a view to increased general fitness for manual occupations, drill should be made compulsory in classes IV to VII of all secondary schools. This proposal is of course sound but does not go far enough. Government consider that drill should be made compulsory for all classes in secondary schools for the sake both of its physical and moral effect. A physical adviser is employed under the Government of Bengal. Given the necessary funds, he could train a sufficient number of drill masters in due course. In addition to this boy scouting should be encouraged. This movement has already made some progress in Bengal and funds are being provided from the provincial revenues for its gradual introduction into Government and aided high schools in the province.

6. The Committee feel unable to recommend manual work as a separate correlated subject in the school course below class VIII. But boys of junior classes still need "hand and eye" training and the Committee, in view of the objects with which they were appointed, feel bound to provide for this. They therefore suggest that in classes IV to VII of high schools hand work should be introduced to illustrate the teaching of such subjects as history, geography, etc., a suggestion welcomed by Government.

7. The Committee propose that manual training as a non-examination subject should be introduced in classes VIII and IX of high schools and high madrasahs in Dacca and that the training should be given mainly at a central workshop. In the workshop they provide for three forms of manual training, wood work, fitter's work and sheet metal work. The Committee do not exclude other forms of practical training which may be provided at particular schools if the school authorities can meet the expense; but, as it is unlikely that Dacca schools will be able to afford to do so, the Committee have worked out a scheme for all the Dacca schools in connection with the central workshop. They have given estimates of cost for a central workshop. The total capital expenditure is estimated at Rs. 50,305, exclusive of the cost of site, and the total recurring expenditure at Rs. 31,690. The scheme is thus, having regard to the small number of schools affected, an expensive one and Government cannot possibly be expected to shoulder the whole burden. Special fees must meet part of the cost. Subject to this reservation the scheme would be acceptable to Government when funds are available.

8. As an extension of this proposal, the Committee further recommend that a limited number of pupils, out of those who have been trained in classes VIII or IX, should be permitted in class X to take a more advanced course of manual training, as an examination subject, in one or more of the subjects, which they have been learning in the two previous classes. These pupils might take their training in the central workshop on Saturdays which would otherwise be left free. The Committee propose

the following special matriculation or high school examination scheme for boys taking this subject :—

Vernacular	...	...	...	1 paper.
English	...	...	...	2 papers.
Mathematics (General)	...	...	...	1 paper.
Ditto (Applied)	...	...	...	1 do.
Drawing	...	...	...	1 do.
Manual Training equivalent to	...	...	...	2 papers.

The Committee suggest that after passing this examination students should be permitted either to enter the Dacca School of Engineering or to proceed to one of the Intermediate Colleges and take the ordinary intermediate science course or the mechanical course at the Dacca Intermediate College, which has been proposed by the Committee. This scheme appears to be on sound lines, and Government will bring it to the notice of the Dacca Board. The scheme cannot, however, be started till the central workshop has been established.

9. The Committee regard it as of great importance that sufficient science should be taught in secondary schools to enable boys to discover whether they have an aptitude for science and to give some preliminary knowledge of the subject to those who have already discovered such a bent. They therefore propose that for students who wish to proceed to higher technological studies the following special course should be provided for the high school examination :—

Vernacular	...	...	...	1 paper.
English	...	...	...	2 papers.
Pure Mathematics	...	...	...	1 paper.
Applied Mathematics	...	...	...	1 do.
Elementary Science	...	...	...	1 do.
Drawing and Practical Geometry	...	...	...	1 do.

Students taking this examination should also be required to produce a certificate from the head master of the school of having gained some practical workshop practice, for instance, in carpentry or sheet metal work and in the handling of tools generally. They further recommend that, as a first step towards the introduction of science teaching in the high schools, Government should provide an elementary physical and chemical laboratory for the Dacca Collegiate School. The capital expenditure required for this development would be Rs. 23,000 and the recurring expenditure Rs. 5,198. Government approve of the proposal to introduce science teaching into high schools in Dacca and to inaugurate a special examination to meet its needs. This will be brought to the notice of the Dacca Board with a view to the creation of the special examination. Government will also consider the possibility of starting the course in the Dacca Collegiate School or elsewhere when funds permit.

10. The Committee recommend the introduction of simple book-keeping as one of the additional optional subjects for the high school examination. The object of this course will be to give those, who take it up, sufficient training to make them useful in modest business concerns. The Committee consider that instruction in this course could be provided at a comparatively small cost, viz., one teacher on Rs. 75—5—150 teaching the pupils of two schools, besides a capital expenditure of Rs. 100 per school. Government are of opinion that this course will be useful and lead

to employment, provided that the training in accounts is combined with training in hand-writing and arithmetic up to a very high standard. Subject to this provision Government accept the proposal and will inform the Dacca Board accordingly. They will also, when funds are available, consider the question of employing a teacher at one of the Dacca Schools as an experimental measure, and of levying a small extra monthly fee from students taking the course, so as to make the scheme partly pay for itself.

**11. Intermediate Colleges.**—The question of vocational training at the Intermediate Colleges is more complex. Here the first question arises whether something more than a practical bias can be given in such colleges and whether the vocational education given therein can be made sufficient to enable a boy who leaves them to earn his own living by means of the vocation for which he has been trained. It is to be borne in mind that, as the Sadler Commission pointed out, the majority of the boys who enter a college of the kind would probably not wish to make a choice at this stage excluding them from University education in the future, and the question arises whether it is practicable to keep this possibility open for them and at the same time to give them a sufficiently specialised training in any one branch to enable them to earn their living on leaving the intermediate college. The Sadler Commission thought that it was possible to do so. The Committee, however, think that the matter is still in an experimental stage and no definite judgment can be expressed on it at the present moment.

**12.** At present both the Dacca and Jagannath Intermediate Colleges teach physics and chemistry. Botany, commerce and dyeing are also taught at the latter institution. The Committee propose the addition of the following courses:—

- (i) An elementary course in the technology of oils, fats and soaps at the Jagannath College.
- (ii) A mechanical science course at the Dacca Intermediate College.

As regards the first proposal, it is stated that the intermediate course in oils, fats and soaps cannot be established at the Jagannath College without considerable increase in the laboratory accommodation unless the second year's teaching is given in the University laboratory for technology proposed by the Committee. Apart from the question of laboratory accommodation the total capital cost of the intermediate course is Rs. 3,000 only and the total recurring expenditure Rs. 3,240 per annum. The college can meet these from its ordinary income. The experiment could therefore be conducted, cheaply as far as the Intermediate College is concerned, but as it is dependent on the more ambitious University courses in technology, it will have to await the fruition of a University scheme on these lines.

In the proposal to start a mechanical science course at the Dacca Intermediate College one is on much more debatable ground. The Committee are divided in their opinion in the matter. The majority favour the establishment of such a course, as they think it would be distinctly advantageous to introduce it in a college of the intermediate type, thereby leading boys, who have had a mainly literary training, to turn their attention to engineering. The minority are opposed to it on the ground that the task and function of developing any educational course in engineering for Dacca and the Dacca district above the high school

stage and below the University stage should be assigned to the Ahsanullah School of Engineering. The cost of the course is estimated at Rs. 66,950 capital and Rs. 15,576 recurring per annum. Without committing themselves definitely one way or the other, Government think that the scheme formulated by the Committee has more than one drawback.

The cost of the proposed course is prohibitive as compared with the expenditure required for the full mechanical and electrical engineering course proposed by the Committee for the engineering school. Further, Government are of opinion that at present an Intermediate College should aim at courses which may possibly be demonstrated by experience to fit a student to earn his living directly he leaves the college. The course proposed for the Intermediate College is admittedly not designed to have any professional value, but would only provide men suitable for finishing their training in some higher or fuller professional or University course, should this be available. Such men would be more appropriately drawn from the passed students of the school. But if they could not go further, the engineering knowledge they had acquired would be of little use in obtaining a living.

As funds are limited and the simultaneous development of two institutions is not advisable, Government are disposed to accept the conclusion of the minority that the task of developing any educational courses in engineering for Dacca and the district should be assigned to the engineering school.

13. The Committee have suggested an improved scheme for the Intermediate Examination in Commerce and have proposed some improvements in the existing commerce course at the Jagannath College at an estimated cost of Rs. 250 capital and Rs. 6,000 recurring per annum. Government accept the revised scheme and will draw the attention of the Dacca Board to it. They will also consider the possibility of providing money for the improvement of the Jagannath College course when funds are available.

14. **Ahsanullah School of Engineering.**—The Government resolution relating to the appointment of the Committee specially asked them to consider the possibility of expanding the School of Engineering so as to provide not only for a degree course, but also for training in such subjects as railway, mechanical and electrical engineering. The Committee accordingly took this problem into consideration and propose the re-establishment at the school of the mechanical and electrical engineering course of the upper subordinate standard which formerly existed there. They state that the vocational course would produce men who would be able to earn their living immediately on leaving the school. The Committee specially press the scheme because they consider it really indispensable to the University course in electro-technics, proposed by them. The course would be one of three years' duration at the school followed by a year's practical training. It would correspond to the upper subordinate course in the Civil Engineering Department and would also be of approximately the same length and standard as the non-University mechanical and electrical course of the Bengal Engineering College, Sibpur. The cost of the scheme is estimated at Rs. 46,625 capital and Rs. 10,262 recurring per annum.

In the opinion of Government the scheme proposed by the Committee seems to be founded on a common fallacy, viz., that to train an engineering subordinate all that is necessary is to give him a college course similar to that required for an engineer but of a lower standard; and,

secondly, to reduce the period of apprenticeship in a workshop. A mechanical and electrical subordinate requires as a matter of fact a longer and severer apprenticeship in workshops than is required for the higher grades. It is essential that he should be first of all a good workman and have intimate knowledge of the labour employed. He should also be able to set out work in the shops. A sufficient knowledge of elementary science to understand theory is desirable ; but to be a good workman is essential. A man with practically no theoretical training may make a fairly successful foreman but a man without a long workshop apprenticeship is useless.

The course proposed in the report is not of the same length and standard as the non-University mechanical and electrical course of the Bengal Engineering College, Sibpur. The course at Sibpur for direct admission is six years in duration—three years in college and three years in approved workshops. The course proposed in the report is exactly similar to the old course at Sibpur which was so severely condemned and which failed so completely.

Government are therefore of opinion that in the present state of their finances it would be of greater advantage, both professional and economic, to keep this work concentrated at the Bengal Engineering College, Sibpur, for a long time to come.

15. The Sub-Committee of the Dacca Technical and Vocational Education Committee made enquiries and are satisfied that the supply of trained engineers is not in excess of the demand. The Committee also point out that the increased number of appointments on railways open to students trained in India will widen the field of employment for engineers. They therefore propose to establish two four year courses—(a) a course in Civil Engineering and (b) a combined course in Mechanical and Electrical Engineering in the University. The courses are to be given under a joint arrangement between the University and the School of Engineering. This would involve additions to the staff of the latter institution. The entrance test for these courses would be the Intermediate Examination in Arts or Science, supplemented by a special test in Mathematics, Physics, Chemistry, Drawing and general knowledge. For certain classes of possible candidates the University would devise a special entrance test. The University would not be responsible for the practical training, this falling upon the School of Engineering or, for candidates for posts under Government, on the Public Works Department. According to the estimates of cost of the joint scheme, Dacca University will have to spend Rs. 2,000 capital and Rs. 8,700 recurring and the School of Engineering Rs. 88,500 capital and Rs. 75,620 recurring.

The Government of Bengal, while agreeing with the Committee that the supply of trained engineers is not in excess of the demand, think that the demand is for trained engineers and not for engineering graduates. Bengal has at present limited facilities for the practical training of student engineers and Government can provide in one college facilities for higher courses in engineering for a number of students in excess of the number for which full practical training can be arranged. Government are moreover of opinion that in the present condition of the mechanical and electrical engineering industries in Bengal it is undesirable to increase the number of institutions which have courses in mechanical and electrical engineering of the nature proposed in the report, as it will be impossible for the firms to absorb all the successful candidates. Apart altogether from the difficulty in obtaining practical training for those students who qualify at an educational institution, it is questionable

whether they will be able to obtain those supervisory positions to which they aspire and which the report optimistically expects to be open to them. These positions are limited in number. In England a student who goes both through a technical course and a workshop training is not unduly disappointed if at the end of it he has to work as a mechanic for some considerable time before he reaches a supervisory position. Students in Bengal are reluctant to do this and sufficient supervisory posts are not available to justify an increase in the facilities of training as proposed in the report.

16. The Committee propose a University course in electro-technics. This will be a three years' course leading up to an Honours degree in Physics with electro-technics as a special subject, to be arranged jointly by the University and the School of Engineering with practical training in the power station of the Dacca Electric Supply Company. A maximum of 24 students a year is proposed, 72 in all. The scheme is contingent on the inauguration of the proposed new non-University course in mechanical and electrical engineering at the School of Engineering. If that ever materialises the present scheme would cost only Rs. 5,180 recurring per annum. Without the help of the Engineering School the scheme will cost Rs. 40,000 capital *plus* the cost of a building, and Rs. 17,400 rising to Rs. 25,800 recurring per annum. Without the help of the School of Engineering the scheme will thus be inordinately expensive and the co-operation of the school pre-supposes the re-establishment there of the mechanical and electrical engineering course which again depends upon finance.

The general idea of the course is said to be such as to give students a training which will enable them to obtain posts as assistants in power-stations, motor-car firms, tramway and general electrical firms and assistants in wireless stations. It is, however, doubtful whether any practical electrical engineer would be satisfied with the training suggested in this course, which is out of date. In the early teaching of electro-technics in England it is true that electro-technics was added as an additional subject to a physics and mathematics course, but the men produced by such a course were so unsatisfactory that it was abandoned long ago. The universal rule now-a-days is to make the basic course mechanical engineering for the first two years and to specialise in electro-technics for two additional years. After this a further training in electrical workshops and power stations is necessary. The proposed training will produce a physicist with a smattering in electro-technics who will have little or no practical value.

17. The Committee recommend the establishment of a general course in chemical technology and of a post-graduate course in the technology of oils, fats, soaps and candles. As regards the former course, their proposal is that an honours course in technical chemistry be instituted to give students a thorough practical and theoretical knowledge of—

(1) the principles of design and working of the chief types of chemical plant and machinery;

(2) the chief chemical technological processes, including the technology of water and fuel which are the basic raw materials of all industries.

Students taking up the general course in chemical technology will have to take an elementary course in mechanical engineering as a subsidiary subject of study as part of this special Honours course. This subsidiary study will occupy two of the three years of the course. It is hoped that the School of Engineering will assist the University in connection with

this course. As regards the latter, the Committee propose a one year's course in the technology of oils, fats and soaps leading on to an M.Sc. degree for those who have previously taken the Honours degree in the proposed Technical Chemistry B.Sc. Examination. The total cost of the two courses is Rs. 1,32,000 capital and Rs. 29,000 recurring per annum. Government accept the scheme, which mainly concerns the University, as sound in principle. They are, however, doubtful whether the finances of the University will permit of funds being allotted for the scheme in the near future.

18. The Committee recommend a scheme for the establishment of a department of tanning and leather chemistry as drawn up by Mr. B. M. Das, Director of the Government Research Tannery, and accepted by Dr. D. B. Meek, Director of Industries. It would cost Rs. 1,66,185 capital and Rs. 53,500 recurring per annum, against estimated receipts of Rs. 19,000 per annum from fees and sales of leather. It is urged in support of the scheme that the raw material is there; the market for the leather is there; technical knowledge and investment of capital in tanning are what are needed and the former will inspire the latter.

The Committee propose—

(1) a B.Sc. (Honours) Course in Leather Technology to extend over three years for students who have taken an Intermediate Examination in Science and two years for those who have taken a Pass B.Sc. Course;

(2) an M.Sc. (Research) Course for those who have taken the B.Sc. degree in Leather Chemistry.

They also suggest—

(3) that the resources of the laboratory should be used to train foreman tanners who would start from the Matriculation stage and would take a diploma course of three years;

(4) that special courses extending over a maximum of six months should be provided for persons who are already in the trade.

Although the scheme prepared by Mr. Das is eminently suitable for the purpose of establishing a Department of Leather Chemistry and Tanning at an Indian University, Government are of opinion that it would not help to solve the industrial problem of unemployment. The Calcutta Research Tannery provides the present needs not only of Bengal but also of Bihar and Orissa, but so small is the demand for trained men that quite 25 per cent. of the men trained at this centre are unable to find employment. In the present state of the industry severe practical training is much more necessary than a knowledge of the theoretical side of the work. The former is given at the Research Tannery while a University course would necessarily have to emphasise the latter. In these circumstances Government cannot agree that it would be wise to allow at present the establishment at considerable cost of a Department of Tanning and Leather Chemistry.

19. The Committee think that it would be premature to start a faculty of agriculture in the University. They think, however, that an agricultural seed industry might be developed in India and that, to meet the demand that may arise, training in Botany should be given in Dacca University. Along these lines of development bacteriologists also will be necessary since the fertility of the soil is intimately connected with its bacterial flora, and most Agricultural Departments are starting sub-sections in this branch of science. At present there are no bacteriologists available and practically no means of training students. The Committee, therefore, recommend the establishment of a Botanical Department and a



Bacteriological Department in the University of Dacca. The botanical laboratory would cost Rs. 46,000 to build, Rs. 30,000 to fit up and Rs. 24,000 for preliminary apparatus. The bacteriological laboratory will entail a total capital expenditure of Rs. 35,500. The recurring expenditure of the Botanical Department is estimated at Rs. 25,000 per annum and that of the Bacteriological Department at Rs. 10,000 per annum.

Remembering on the one hand that agriculture is the one industry of paramount importance in Bengal and on the other the enormous possibilities of its development on scientific lines, it would in the opinion of Government be wrong to neglect this opportunity of spreading special knowledge on these points even though there may be doubts whether the country can absorb at once trained seed and soil experts. When further it is seen that Botany and Bacteriology are two subjects which give students excellent training in scientific principles, modes of thought and working at a low cost, the case for development along these lines is even stronger. Accordingly if funds permit Government are anxious that these branches of study should be taken in hand.

20. The University of Dacca have set up a Department of Commerce which has been organised in correlation with the Department of Economics. The Department of Commerce is rather poorly equipped and the Committee recommend that this should be improved. The cost involved is Rs. 9,000 capital and Rs. 8,640 recurring per annum. Government accept the principle of manning the Department of Commerce in the University adequately, as proposed by the Committee. Before, however, giving effect to this recommendation the University would do well to weigh carefully its financial position and the needs of its other departments.

21. The financial effect of the Committee's proposals has been mentioned in the preceding paragraphs. The total ultimate cost involved will, however, be much more than the estimates given by the Committee would seem to show. Any attempt to carry out the proposals at Dacca will naturally involve Government in demands for similar expenditure elsewhere. Technical and vocational education, which often involves the services of expert highly-paid teachers, and generally the consumption of materials and the use of expensive machinery, cannot but be more expensive than literary education. It will be impossible for the provincial revenues to bear so heavy a burden unless a substantial portion of the cost is contributed by the people themselves. If, therefore, a particular institution be willing to start a course, it should at the same time be prepared to meet a part of the cost in the shape of increased fees. Government would then have the proposals worked out in detail and consider the question of giving effect to them in order of urgency according as funds permit.

ORDER.—Ordered, that the resolution be published in the *Calcutta Gazette* and that copies be forwarded for information to the Agriculture and Industries Department of this Government; the Director of Public Instruction, Bengal; the Secretary, Board of Intermediate and Secondary Education, Dacca, and the Registrar, Dacca University.

By order of the Governor in Council,

J. H. LINDSAY,

*Secretary to the Government of Bengal.*





# Report of the Indian Sandhurst Committee

Dated 14th November 1926

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**REPORT**

**OF THE**

**INDIAN SANDHURST COMMITTEE**

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## FOREWORD BY THE GOVERNMENT OF INDIA.

In issuing the report of the Indian Sandhurst Committee, the Government consider it necessary to emphasise that neither they nor His Majesty's Government have yet formed their conclusions on it, and that those conclusions must necessarily take account of certain factors of which it was not within the province of the Committee to undertake a complete survey. For example, although the Committee's recommendations in themselves are designed primarily with a view to Indian conditions, the problems of recruitment and training of King's commissioned officers for whatever service are essentially an Imperial concern, and any proposals reacting on them will require close scrutiny by His Majesty's Government and their Military Advisers. Again, the Government when called upon to deal with any scheme of increasing Indianisation extending over a number of years must leave themselves free to consider whether the basis of that scheme offers the sure stable line of advance towards the creation of a Dominion Army, or whether alternative methods which did not fall within the Committee's terms of reference might not more profitably be explored. The Committee's report will thus be used as a starting point for discussions with His Majesty's Government to whom the Government of India will in due course forward their considered views on it.

G. M. YOUNG,

*Secretary to the Government of India.*

ARMY DEPARTMENT,

SIMLA ;

*April 1st, 1927.*



# INDIAN SANDHURST COMMITTEE.

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## REPORT.

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### CHAPTER I.

#### INTRODUCTORY.

1. Our Committee, known as the Indian Sandhurst Committee, or otherwise as the Skeen Committee, was appointed in June, 1925. The official communiqué announcing its constitution was as follows :—

“ In the Legislative Assembly on the 14th March last, in the course of the general discussion on the budget the Hon'ble Sir Alexander Muddiman gave an undertaking that the Government of India would consider the appointment of a Committee to examine the means of attracting the best qualified Indian youths to a military career and of giving them a suitable military education. With the concurrence of the Secretary of State, the Government of India have now definitely decided to appoint such a Committee. The Chairman will be Lieutenant-General Sir Andrew Skeen, K.C.B., K.C.I.E., C.M.G., Chief of the General Staff in India. The Government of India are not yet in a position to announce further details, but the Committee will include non-official members representing both the military classes of the population and Indian political opinion.”

2. *Terms of Reference.*—The terms of reference to the Committee, as finally framed by the Government of India, are as follows :—

“ To enquire and report :—

- (a) By what means it may be possible to improve upon the present supply of Indian candidates for the King's Commission both in regard to number and quality.
- (b) Whether it is desirable and practicable to establish a Military College in India to train Indians for the commissioned ranks of the Indian Army.
- (c) If the answer to (b) is in the affirmative, how soon should the scheme be initiated and what steps should be taken to carry it out.

- (d) Whether, if a Military College is established in India, it should supersede or be supplemented by Sandhurst and Woolwich so far as the training of Indians for the commissioned ranks of the Indian Army is concerned."

3. *Composition of the Committee.*—The Committee, as finally constituted, was composed as follows :—

*Chairman :*

Lieut.-General Sir Andrew Skeen, K.C.B., K.C.I.E., C.M.G.,  
Chief of the General Staff.

*Members :*

Pandit Motilal Nehru, M.L.A.

Mr. M. A. Jinnah, M.L.A.

The Hon'ble Sardar Jogendra Singh, Minister of Agriculture,  
Punjab Government.

The Hon'ble Sir Phiroze Sethna, Member of the Council of  
State.

Diwan Bahadur Ramachandra Rao, M.L.A.

Nawab Sir Sahibzada Abdul Qaiyum, K.C.I.E., M.L.A.

Subedar-Major and Honorary Captain Hira Singh, Sardar  
Bahadur, M.B.E., M.L.A., late 16th Rajputs.

Dr. Ziauddin Ahmad, C.I.E., M.L.C., Pro-Vice-Chancellor,  
Aligarh Muslim University.

Captain J. N. Banerjee, Bar.-at-Law.

Major Thakur Zorawar Singh, M.C., Chief Secretary, Council  
of Administration, Bhavnagar State, (representing the  
Indian States).

Risaldar-Major and Honorary Captain Haji Gul Mawaz Khan,  
Sardar Bahadur, late 18th Lancers.

Major Bala Sahib Daffé, 7th Rajput Regiment.

Mr. E. Burdon, C.S.I., C.I.E., I.C.S., Secretary to the Govern-  
ment of India in the Army Department.

Pandit Motilal Nehru tendered his resignation as a member of  
the Committee on March 11th, 1926.

4. *The proceedings of the Committee.*—The Committee held their first meeting at Simla on August 12th, 1925 and between that date and August 22nd a series of preliminary discussions took place for the purpose of settling their future course of action. Opinions were exchanged upon various matters arising out of the terms of reference, and a decision was arrived at as to the form which the Committee's

questionnaires should take and as to what further measures should be adopted for the purpose of collecting evidence. In order to give the members an opportunity of acquainting themselves with the various implications of the problems set and to ensure also that as far as possible the questionnaires would be complete, a number of specially chosen experts, both military and civil, were asked to give oral evidence of a preliminary character between August 28th and September 12th. These included the Commandant and Headmaster of the Prince of Wales' Royal Indian Military College, Dehra Dun, Lieut.-General Sir John Shea, Adjutant-General in India, Mr. E. Littlehales, Officiating Educational Commissioner with the Government of India, Sir Sivaswamy Aiyer, and Mr. F. A. Leslie Jones, Principal of the Mayo College, Ajmer. After hearing these witnesses the Committee completed and issued their questionnaires, after which they adjourned until December by which time it was expected that all replies would be received. Separate questionnaires numbering ten in all were framed for the Governors of Provinces and Local Governments, the General Public, Educational Authorities, Indian States, Commanding Officers of Indian King's Commissioned officers trained at Sandhurst, Parents of Indian King's Commissioned officers trained at Sandhurst, Indian King's Commissioned officers trained at Indore, Indian King's Commissioned officers trained at Sandhurst, and Viceroy's Commissioned officers. A special questionnaire was also sent to all Indian Universities with regard to the possibility of their recognising the course of training at the Prince of Wales' Royal Indian Military College, Dehra Dun, as conferring an educational qualification equivalent to some University standard. Of necessity, certain of the questionnaires and the replies received have been treated as confidential.

The Committee met again in Delhi on December 14th, 1925 and proceeded to consider the replies received to their questionnaires and to take the oral evidence of further specially expert witnesses, of military witnesses of all categories and of others who appeared from their replies to the questionnaires to be able to supply further information of value. Meetings were held daily for this purpose from December 14th to 23rd, and again later between January 8th and 16th, January 29th and February 6th, and February 18th and 27th. On February 28th at the kind invitation of Dr. Ziauddin Ahmad a visit was paid by the Committee to Aligarh and there the evidence of three members of the University staff was taken. In all the following witnesses were examined orally :—

Special Witnesses ..	..	..	16
General Public Witnesses ..	..	..	32
Educational Witnesses ..	..	..	19
Representatives of Indian States ..	..	..	4

Commanding Officers of Indian King's Commissioned officers	.. .. .	10
Parents of Indian King's Commissioned officers	..	5
Indian King's Commissioned officers trained at Indore	.. .. .	11
Indian King's Commissioned officers trained at Sandhurst	.. .. .	20
Viceroy's Commissioned officers	.. .. .	5

The civilian witnesses examined represented all shades of thought and all parts of India and included gentlemen well known in the public life of India such as Sir Chimanlal Setalvad, Dr. Paranjpye and Sir Purshotamdas Thakurdas from Bombay, Mr. Venkatapati Raju, Dr. Meston, Mr. S. Satyamurti from Madras, Col. Nawab Malik Sir Umar Hayat Khan, Sir George Anderson and Captain Ajah Khan from the Punjab, Dr. Sir Hari Singh Gour from Delhi, Dr. Chakravarti from the United Provinces, Mr. T. C. Goswami from Bengal, and U Tok Kyi from Burma. Among those representing Indian States was Sir Prabhashankar Pattani, formerly a member of the Executive Council of Bombay and of the India Council, while Lieut.-Colonel H. A. J. Gidney spoke on behalf of the Anglo-Indian Community.

At an early stage in the Committee's proceedings it was decided that it would be advisable that a Sub-Committee should be sent to England, and possibly also to other countries, to study at first hand the military training institutions there and also the system of education which usually precedes admission to a purely military college. It was originally proposed that this Sub-Committee should consist of five members, and the Committee selected for the purpose Pandit Motilal Nehru, Mr. Jinnah, Nawab Sir Sahibzada Abdul Qaiyum, the Hon'ble Sir Phiroze Sethna and Major Thakur Zorawar Singh. All of these agreed in the first instance to undertake the mission, but later Pandit Motilal Nehru resigned from the main Committee and Nawab Sir Sahibzada Abdul Qaiyum was unable for personal reasons to leave India. Their places were not filled since it had been recognised from the beginning that the Sub-Committee could not and need not be representative of different interests to the same extent as the main Committee and it was felt in the end that a smaller deputation would be able to carry out more expeditiously and effectively the duties delegated to them. Accordingly the Sub-Committee, as finally constituted, consisted of Mr. Jinnah, Sir Phiroze Sethna, and Major Zorawar Singh. Leaving India about the beginning of April, 1926, the members first met in London at the end of April. They visited educational institutions of all kinds in England and also toured in France, Canada and the United States. They were provided before they left India with a complete list of all points on which the

main Committee desired them to obtain information in the various countries they visited. They returned to India on August 13th, 1926.

Meanwhile a second Sub-Committee consisting of Lieut.-General Sir Andrew Skeen, Dr. Ziauddin Ahmad and Major Bala Sahib Daffé, had set out on August 8th on a tour of Indian Universities for the purpose of studying on the spot the extent to which suitable candidates for an Army career are to be found in these institutions. This Sub-Committee visited Bombay, Poona, Madras, Calcutta, Benares and Allahabad. The Punjab and Aligarh Universities were omitted because at the time they were closed for the summer vacation.

The main Committee met again in Simla between August 22nd and 28th, 1926, and after considering the evidence previously collected and the further information supplied by the two Sub-Committees formulated their conclusions and gave instructions for the drafting of their report. The report was considered and passed at two final sessions held at Delhi and Bombay from the 23rd October to the 4th November, 1926.

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## CHAPTER II.

## THE FIRST TERM OF REFERENCE.

(a) "*By what means it may be possible to improve upon the present supply of Indian candidates for the King's Commission both in regard to number and quality*".

5. *Introductory.*—Our first term of reference, reproduced above, implies that the number of Indian candidates who seek the King's Commission in the Indian Army, and possess the requisite qualifications for service in that capacity, is at present conspicuously small. The proposition so stated reflects a condition of affairs far from satisfactory, which might have been avoided, but which for the moment actually exists. We will review briefly the facts upon which the proposition is based and will then proceed to examine the causes of the deficiency as revealed by the evidence which we have heard. But it will be convenient, in the first place, to give a short historical account of the steps which have so far been taken to attract Indians to the career in question.

6. *Historical retrospect.*—Before 1918, Indians were not eligible to hold the King's Commission, that is to say, the Commission which is held by the British officers of the British and Indian Armies. For more than forty years the exponents of the political and national aspirations of the Indian people had demanded insistently on the platform of the Indian National Congress and elsewhere that Indians should be given opportunities of service in the Indian Army equal to those enjoyed by their British fellow subjects. But this demand has so far met with no substantial response from Government. It is true that in 1905 a special form of King's Commission in His Majesty's Native Indian Land Forces had been instituted for those Indian gentlemen who passed successfully through the full course of the Imperial Cadet Corps. But this commission carried only the power of command over Indian troops, and the holders of it, as they could not rise above the position of company officer in a regimental unit, had no effective military career open to them. Again, in 1918 the honourable part played by India in the Great War and the invaluable service which India then rendered to the Empire, brought to Indians the realisation in some measure of the privilege which they had long claimed to be theirs as of right. Indians were declared eligible on equal terms with British youths to receive the King's Commission in His Majesty's Land Forces, which carries with it the power of command over British as well as Indian troops. In pursuance of the decision last mentioned, the Great War being still in progress, a cadet school with accommodation for 50 cadets was opened at Indore in October, 1918, for the purpose of providing Indian cadets with the necessary military training, while in addition ten vacancies per annum were allotted to Indians at the Royal Military

College, Sandhurst. The Indore school, which was only opened as a temporary expedient to meet the special needs of the war, was closed after one year's existence. 49 cadets were admitted to Indore and 39 were granted King's Commissions. Since then King's Commissions are granted only to those Indian boys who are trained and qualify at Sandhurst.

The Montague-Chelmsford report on Indian constitutional reforms contains a reference to the problem of the Indianisation of the higher ranks of the Indian Army which may appropriately be here repeated :—

“ There remains one item the importance of which in the eyes of India outweighs all others. British commissions have for the first time been granted to Indian officers. . . . . The services of the Indian Army in the war and the great increase in its size make it necessary that a considerable number of commissions should now be given.”

The view of Lord Chelmsford and Mr. Montague, as expressed in the first sentence of the above quotation, was amply confirmed by the result of discussions which took place in the Legislative Assembly in the years 1921, 1923 and 1925, in the last of which the genesis of this Committee is to be found.\* But the fact remains that there

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\*NOTE.—The following resolutions on the subject have been adopted by the Legislative Assembly :—

- (i) Resolution 7 of March 28th, 1921 :—“ This Assembly recommends to the Governor-General in Council :—

  - (a) That the King Emperor's Indian subjects should be freely admitted to all arms of His Majesty's military, naval, and air forces in India and the ancillary services and the auxiliary forces, that every encouragement should be given to Indians—including the educated middle classes—subject to the prescribed standards of fitness, to enter the commissioned ranks of the Army and that, in nominating candidates for the entrance examination, unofficial Indians should be associated with the nominating authority, and in granting King's Commissions, after giving full regard to the claims to promotion of officers of the Indian Army who already hold the commission of His Excellency the Viceroy, the rest of the commissions granted should be given to the cadets trained at Sandhurst. The general rule in selecting candidates for this training should be that the large majority of the selections should be from the communities which furnish recruits, and as far as possible in proportion to the numbers in which they furnish such recruits.
  - (b) That not less than 25 per cent. of the King's commissions granted every year should be given to His Majesty's Indian subjects to start with.” (Legislative Assembly Debates, 1921, Vol. I, No. 15, page 1753).

- (ii) Resolution 8 of March 28th, 1921 :—“ This Assembly recommends to the Governor-General in Council :—

has in the meantime been no advance upon the ten vacancies at Sandhurst originally allotted : and moreover, Indian King's Commissioned officers are still only eligible for employment in the cavalry and infantry arms, and they are not employed as King's Commissioned officers in the Artillery, Engineer, Signal, Tank and Air arms of the Army in India.

In the circumstances described it was realised that the profession thus opened to Indians by the decision of 1918 would be unfamiliar and arduous, and that some special concessions would be necessary, at any rate in the first instance, to induce suitable candidates to come forward. From the first it had been laid down that Indian boys should merely have to compete among themselves for the ten reserved vacancies at Sandhurst and should not have to compete for admission with British boys ; the standard adopted for the entrance examination in India was, as it still is, lower than that demanded in England ; the age limit was raised by one year in order to compensate for the later educational development of the average Indian boy, due largely to his having to learn his lessons in a foreign language ; and, although at this time the examination for entrance to the Indian Civil Service was held only in England, it was arranged

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- (a) That adequate facilities should be provided in India for the preliminary training of Indians to fit them to enter the Royal Military College, Sandhurst. \*
  - (b) That as soon as funds be available, steps should be taken to establish in India a Military College, such as Sandhurst and the desirability of establishing in India training and educational institutions for other branches of the Army should be steadily kept in view". (Legislative Assembly Debates, 1921, Vol. I, No. 15, page 1754).
  - (iii) Resolution passed on July 4th, 1923 :—" This Assembly recommends to the Governor General in Council that he will be pleased to urge upon the Imperial Government the necessity for promptly giving effect to Resolutions 7, 8, 10 and 11 of the Assembly passed on the 28th of March, 1921, in connection with the Esher Committee's Report with the concurrence of the Government of India ". (Legislative Assembly Debates, 1923, Vol. III, No. 69, page 4301).
  - (iv) Resolution passed on February 19th, 1925 :—" This Assembly recommends to the Governor General in Council that a Committee including Indian Members of the Legislature be immediately appointed to investigate and report :
    - (a) what steps should be taken to establish a military college in India to train Indian officers for the commissioned ranks of the Indian Army ;
    - (b) whether, when a military college is established in India, it should supersede or be supplemented by Sandhurst and Woolwich so far as the training of Indian officers is concerned ; and
    - (c) to advise at what rate Indianisation of the Army shall be accelerated for the purpose of attracting educated Indians to a military career." (Legislative Assembly Debates, 1925. Vol. V, No. 19, page 1273).



that the Army entrance examination for Indian boys, resident in India, should be held in India. The passages of successful candidates to and from the United Kingdom are paid from public funds. Indian boys were made eligible for King's India Cadetships at Sandhurst on the same terms as British boys. Finally, in order to reduce the educational handicap, the Prince of Wales' Royal Indian Military College was opened at Dehra Dun in March, 1922 with a capacity of 70 cadets for the purpose of giving prospective candidates for the army an education, commencing from an early age and on English public school lines, such as would fit them not only for the entrance examination but also for the subsequent ordeal of the Sandhurst course of training, and for their future association in the Army with British comrades.

7. *The present method of selecting candidates.*—Candidates for the Army entrance examination held in India are *selected*, that is to say, the system at present in force is not one of open competitive examination. The procedure laid down is, briefly, as follows. Some months beforehand the Government of India inform Local Governments and Administrations of the date fixed for the examination, and issue a communiqué to the press to the same effect. On receipt of this information the Local Governments publish a notification in the Local Government Gazette, issue a notice to the press of the Province, and address local officials and in some cases educational authorities announcing the date of the examination and calling for the names of would-be candidates. The procedure according to which applications to sit at the examination have to be submitted varies from Province to Province, but as a general rule it is necessary for the applicant to send his name in the first instance to the Deputy Commissioner of his district, who forwards the application, if approved by him, to the Commissioner, who in his turn forwards it to the Local Government, if approved by him. Either the Deputy Commissioner or the Commissioner may reject the application of a candidate whom these authorities consider to be unsuitable. In some cases educational authorities are permitted to send in names direct to the Local Government. All these authorities are instructed expressly to select candidates as a general rule from communities which furnish recruits for the Army. It is at the same time laid down in the regulations that the claims of candidates from the educated middle classes should receive consideration.\* A candidate whose applica-

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\*NOTE.—Paragraph 4 of the "Provisional Regulations respecting Admission of Indian Gentlemen to the Royal Military College, Sandhurst, England, 1925" lays down that :—"The general rule in selecting candidates should be that selections should be made from the communities which furnish recruits, in proportion to the numbers in which they furnish such recruits. Regard should also be had to the claims to consideration of candidates from the educated middle classes."

tion reaches the Local Government is summoned in due course to appear before a Provincial selection board presided over as a rule by His Excellency the Governor and including usually one or more, non-official Indian gentlemen of standing in the Province. Should the candidate be considered suitable by this board, his name is forwarded to the Government of India and he is permitted to sit for the competitive entrance examination. This examination consists of a written test, a medical test, and an oral examination by a board consisting of two senior military officers who have held command of Indian regiments, and an educational officer nominated by His Excellency the Viceroy. On the combined results of these three tests the final selection of candidates is made by His Excellency the Viceroy, who recommends those selected to the Secretary of State for India for admission to Sandhurst.

8. *The Indianisation of eight units of the Indian Army.*—While, as has been stated, no increase has been made in the number of vacancies for which Indian candidates are eligible and there has consequently been no acceleration of the pace of Indianisation, the method of Indianisation was in 1923 altered to a special form under what is known as the “eight units scheme” designed to test the practicability of successful Indianisation in the Army. The scheme can best be described in the words of the announcement made in the Legislative Assembly by the late Lord Rawlinson, then Commander-in-Chief in India, on the 17th February, 1923 :—

“Speaking in this Assembly on the 24th January last, I expressed the hope that it would be possible to announce at no very distant date what measures are to be adopted in regard to the Indianisation of the Indian Army. In the short interval that has elapsed the correspondence which I then said was proceeding has been concluded, and I am able to announce to the House the following decision. The Government consider that a start should be made at once so as to give Indians a fair opportunity of proving that units officered by Indians will be efficient in every way. Accordingly it has been decided that eight units of cavalry or infantry be selected to be officered by Indians. This scheme will be put into force immediately. The eight units to be wholly Indianised will be mainly infantry units, but there will be a proportion of cavalry. They will be chosen judiciously so as to include as many representative types as possible of Indian battalions and cavalry regiments of the Indian Army. Indian Officers holding commissions

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*Cf. also paragraph 8 of “Information respecting conditions of admission to the Prince of Wales’ Royal Indian Military College, Dehra Dun (Revised 1924)” :—“In selecting the candidates whom they desire to recommend, the local authorities referred to in rule 12 will give special consideration to the sons of Indian officers of good service : and their recommendations will always include a proportion of candidates of this class, if available and suitable.”*

in the Indian Army will be gradually transferred to Indianising units so as to fill up the appointments for which they are qualified by their rank and by their length of service, and the process of Indianising these units will then continue uninterruptedly as the officers gain seniority and fitness in other respects, which will qualify them for the senior posts. I have given the House these few details because I think they will be of interest as revealing some of the practical aspects of the change. There is one other point, however, which it is necessary for me to explain. It is that, simultaneously with the Indianisation of these selected eight units, Indians who qualify for the King's Commission will continue as at present to be posted to the other units of the Indian Army. The number of Indian cadets now sent to Sandhurst each year, if all pass out successfully, is more than sufficient to replace the normal wastage in the eight units alone."

9. *Results achieved.*—Since 1918, there have been all told 83 vacancies at Sandhurst exclusively reserved for Indian cadets, three extra vacancies having been allotted at different times for the purpose of replacing boys who, having secured admission to Sandhurst, failed to proceed there or who were removed shortly after admission. For these vacancies only 243 boys have competed in India. 16 Indian boys educated in England have been passed by the Selection Board at the India Office : and, these being included, the total number of Indian boys who have gained admission to Sandhurst has coincided with the number of vacancies allotted, i.e., 83. Of these, 18 boys are still at Sandhurst, having not yet completed the prescribed course of training : 44 have passed out successfully : 2 died and 19 failed to qualify. The percentage of failure among the boys who have to date completed the Sandhurst course has been approximately 30 : the corresponding percentage of failure among British boys at Sandhurst is approximately 3.

Of the 44 Indian boys who have passed successfully out of Sandhurst, 42 now remain in the Indian Army. The other two have, for different reasons, resigned their commissions.

Of the 83 boys who passed the Sandhurst entrance examination 35 were residents of the Punjab, 12 belonged to Bombay, 9 each to the United Provinces and Bengal, 5 to the North-West Frontier Province 3 each to Rajputana and Hyderabad, 2 each to Burma and Coorg, and 1 each to Behar, Assam and the Central India Agency.

These figures speak for themselves and require little comment from us. But we are bound to add that the simple inference which the statistics suggest is confirmed by the reports of the various Boards of Examiners which have conducted the entrance examination in India and by most of the reports submitted by the Sandhurst authorities on the earlier contingents of Indian cadets. Recently, since the products of Dehra Dun have appeared at Sandhurst, there have been

more encouraging results. But even so the system which exists to-day in regard to the recruitment of Indians as King's Commissioned officers has resulted in failure. The number of candidates who appear is insignificant, and the few vacancies allotted at Sandhurst are filled with the greatest difficulty. Yet it is hard to believe, and we do not believe, that among the 300 million inhabitants of India, there does not exist a supply of potentially valuable material sufficient to provide competent Indian King's Commissioned officers in much larger numbers than are at present forthcoming. The system of recruitment is defective, and it is this system which must be attacked. From the national point of view and from a wider standpoint also it is imperative that the best material wherever it exists should be sought for and encouraged. His Excellency Sir Malcolm Hailey, Governor of the Punjab, has said in his evidence—

“ The matter is in my opinion one of supreme importance. India is gradually losing the somewhat isolated position it has occupied for the last two generations in the politics of Asia, and will have to meet complications of a different character than the purely frontier disturbances with which it has been familiar of late years. It is a point on which I need not enlarge ; the facts are too well known ; but it appears to me of supreme importance to secure the best possible material for Indian officers of the Army.”

Sir Prabhashankar Pattani in his evidence has stated the other and wider aspect of the matter—

“ My point of view is not from the point of view of Indianisation against Europeanisation. I am only treating it as an Imperial question. It is in the interest of the Empire itself that every component part, every limb of the Empire, should be equally strong so that no weak link or organ, no weak part of the body, should be so weak as to hamper the whole of the body in the event of a great danger ”.

With these opinions and sentiments we wholly agree. The view of Government must, we take it, be the same and further argument or exposition on our part would therefore be superfluous.

#### CAUSES OF THE PRESENT FAILURE.

10. *The past policy of Government.*—Many and various reasons have been assigned for the unsatisfactory state of affairs described above. The root cause is plain to see. It consists in the fact that until 8 years ago Indians were wholly excluded from positions of high responsibility in the army, all military appointments carrying the King's Commission being held by Europeans alone. The potency of this cause will be at once appreciated when it is remembered that in the United Kingdom the great majority of army officers are drawn from families with traditions of military service and military distinction extending through many generations. In India, and so far

as Indians are concerned, the position is entirely different. As is well known, there are classes of the population with whom the profession of arms is hereditary, and *prima facie* these should readily produce good material of the kind required : but their experience of military service is confined to service in the ranks, or service as Viceroy's Commissioned officers whose authority and responsibilities are narrowly limited. The King's Commission is now open to those Indians also who do not belong to the so-called martial classes, that is to say, to Indians of classes which, owing to the comparative smallness of the Indian Army and on the principle of the survival of the militarily fittest, are not enlisted in the Indian Army at all. These have no recent tradition of military service of any kind. It is in fact not too much to say that until quite recently the educated middle classes have been definitely debarred from a career as military officers in the army of their country.

In addition to the other factors which have been mentioned, sections of Indian political opinion charge Government with having increased unnecessarily the difficulties in the path through the restrictions of the Arms Act, or, as political opinion expresses it, the disarmament of the people.

In these circumstances it is not surprising that there should be on the part of the generality of Indians great and widespread ignorance of the possibilities of a career in the higher ranks of the army and a corresponding lack of impulse to seek out that career and adopt it. We have in the course of our inquiries heard doubts expressed whether a strong and genuine military spirit, such as is essential to the training and command of troops, can be created or, it may be said, revived in the people of India as a whole. It is suggested that in certain parts of the country climatic influences and detachment from the immediate menace of any form of external aggression constitute a natural and perhaps insuperable obstacle. But even those who express such doubts and suggestions would not proceed to urge that the Government should refrain from attempting to build up a military tradition more comprehensive and more widely diffused than that which exists at present.

The task which the Government have laid upon themselves is not easy. In view of the past exclusion of Indians from the higher ranks of the army, in view also of the past history, in other respects, of India under British rule, of her past dependence upon others for the higher administration of the country, both civil and military, there are difficulties which it will require a special degree of patience, wisdom and sympathy to surmount. The remaining causes which have been represented to us are in the main particular manifestations of the general root cause which we have here described. It is important to examine them in some detail because the process not infrequently suggests the specific remedy required. But to see the problem as a whole in proper perspective, it is in our opinion essential

constantly to bear in mind the primary facts and considerations set forth in this paragraph.

11. *Defects in the educational system of India.*—One of our most authoritative witnesses has said "It must be recognised that the system of education in India differs so widely from that in England that Indian boys are at a real disadvantage in complying with a test such as is required for entrance into Sandhurst". The truth of this statement is beyond question. The British officer of the Indian Army upon whose standards the test for entrance into Sandhurst is based is the product of a very highly organised system of education of which at present no counterpart exists in India, except in so far as some of the features of the English public school have been incorporated in the Prince of Wales' Royal Indian Military College, Dehra Dun. The English boy usually proceeds to a preparatory school at the age of 7—8 years, and thence at the age of 13—14 years to a public school where he remains until he passes into Sandhurst at the age of 18—19 years. In both types of school, he is as a rule away from his home. Apart from the literary education he receives, a great deal of attention is paid to the training of his character by means of games and the throwing of responsibility for much of the school discipline on the shoulders of the boys themselves. It is claimed that in this way the power of leadership and the spirit of initiative are strongly developed. Much attention is paid to physical training and in the public schools a measure of military training can be obtained in the Officers' Training Corps, membership of which is however not compulsory. The ordinary schools and colleges of India do not provide these special advantages, nor does the ordinary curriculum in these institutions cover the subjects of the army entrance examination. In addition, the Indian boy usually commences his real education at a later age than the English boy and is then further handicapped by having to imbibe his literary instruction through the medium of a foreign language. It must be frankly acknowledged therefore that the early education and training which the average Indian boy receives is much less complete than that which a boy enjoys in England, France or America : and consequently the Indian boy in present circumstances is handicapped in competition with British boys of equal age, especially in a sphere where physical considerations and general aptitude for dealing with and controlling men are of equal importance with purely intellectual attainments.

It follows that material reforms will be required in the matter of educational organisation and methods before Indian schools and colleges can hope to produce a regular flow of Indian boys fitted in every way to hold the King's Commission, and we make recommendations on this subject in another part of our report. At this point we wish to emphasise the fact that the present deficiencies in the Indian educational system have a necessary connexion with the past policy of Government in regard to the admission of Indians to the

higher ranks of the Army. In England the educational system has been definitely adapted, in part at any rate, to the production of efficient leaders of men. In India the educational authorities have had no encouragement to adopt a similar policy : there have been no similar openings for which to train their boys.

12. *The age limit.*—At present an Indian boy is required to qualify for admission to Sandhurst before attaining the age of 20, this being higher by one year than the age limit prescribed in the case of British boys. It has been represented to us that the age limit for Indian boys should be raised still further as compensation for the handicaps of early education to which we have previously referred. But to raise the age limit for admission to Sandhurst and consequently the age at which the boy is commissioned would bring in its train disadvantages in the boy's subsequent military career. The proper solution for the disability with which we are here dealing is that education should be commenced at an earlier age than is usual at present and that the methods of education should be reformed. Ultimately we think it would be a desirable result if British and Indian boys were commissioned at the same age and entered the service together on an equal footing in regard to age as well as in other respects.

13. *Lack of publicity and suitable propaganda.*—We have already referred to the wide-spread ignorance which exists regarding a career in the Army, and we believe this to be due in part to lack of publicity. We find that witnesses from the Punjab alone are satisfied with the official information which is at present issued on the subject. Witnesses from other parts of India have stated almost unanimously that Government have not sufficiently studied or practised methods of publicity and that far more should be done to educate the people to a knowledge of the merits of a King's Commissioned officer's career, of the qualifications required by intending candidates or of the means by which such qualifications may be secured.

14. *Defects in present method of selection.*—There are certain features in the present method of selection which have been strongly and we think justifiably condemned by many of our witnesses. In the first place it is regarded as seriously objectionable that the channel of application should be so rigidly official and that the intending candidate should have so many official stages to traverse, the scrutiny by the Deputy Commissioner, the scrutiny by the Commissioner and finally the selection by the Governor and his advisers, before he gains the right to appear at the entrance examination. It is contended, correctly as we think, that the local officials are not in intimate contact with certain classes of the community capable of supplying suitable candidates and that candidates tend therefore to be drawn almost exclusively from the families of officials, serving and retired, and from the families generally of individuals who, for one reason or other, are concerned to maintain close relations with Government and Government officials. It is urged that in India as in

England the educational authorities, who possess valuable knowledge of a boy's school character and educational qualifications, should be allowed to play a prominent part in the initial selection of candidates. In the second place, it is urged, and we agree, that it is undesirable that the power of rejecting a candidate altogether should be vested not only in the Local Government but also in the Commissioner and the Deputy Commissioner. It is probable, we think, that candidates, particularly those who have no official connexion, would be deterred from even approaching so formidable a series of tests. A third deterrent on which emphasis has been laid from the point of view of the general public is the fact that the instructions to the selecting authorities definitely imply that the sons of soldiers are to be given preference. Finally, it has been represented that while in England specific arrangements have been made to enable efficient non-commissioned officers to qualify for promotion to commissioned rank, no corresponding provision has been made in India to enable Viceroy's Commissioned officers to gain the King's Commission, though these as a class possess military traditions and military qualities of great value, and on their co-operation and good will the success of the Indianisation of the army must largely depend.

15. *Objections to Sandhurst.*—Another check upon the flow of candidates has undoubtedly been the necessity of proceeding to Sandhurst for military training. The average Indian parent has been and still is reluctant to send his son, at an impressionable age, to a distant foreign country of which very probably he has no personal knowledge himself. The idea of separation is in itself repugnant : but there has also been in the minds of many parents the natural fear that their sons would not be able to acquit themselves with credit in an atmosphere so utterly unfamiliar as that of a British military college, governed by a stern discipline, in which the Indian element is liable to be swamped by an overwhelming majority of British boys with whom the Indian cadets can as a rule have little in common. There has also been the fear of exposure to temptations which the Indian boy, from lack of experience alone, might not be able to resist. The problem of how the Indian boy should spend his holidays presents further difficulties : and we have also reason to believe that the arrangements which at present exist for the official guardianship of Indian cadets are not at all satisfactory. We are aware that many Indian parents of their own volition send their sons to European Universities in order to obtain some form of academic or professional training : and such boys have not the protection which is afforded to cadets at Sandhurst, at any rate during term-time. But the two matters are regarded differently, for two reasons. In the first place the Indian boy who goes to Oxford or Cambridge is generally older and better able to look after himself. Secondly, a very high percentage of the Indian boys first sent to Sandhurst failed to obtain commissions and parents came to



know that the consequences of such failure are very serious. It must be a rare thing for an Indian boy to return at the end of his University training without some qualification which will enable him to enter some recognised walk of life. The Indian boy who fails at Sandhurst is thrown upon the world without any marketable qualifications.

We believe, however, that the weight of these difficulties is now diminishing. The best type of Indian boys who in recent years have been successful at Sandhurst say they enjoyed their life there and unhesitatingly acknowledge the great advantage they have derived from being trained there. The boys who have received their early education at Dehra Dun do not suffer from the same disabilities as the earlier batches of cadets and their impressions of life at Sandhurst are communicated to others. And indeed it was essential that in the first instance Indians should receive their military training at Sandhurst. An Indian King's Commissioned officer must like the British officer be capable of handling mixed bodies of men and for that purpose he should have the advantage of some period of association with the British cadets who are taking up commissions at the same time as himself. A common background of early training is of great importance in the army where *esprit de corps* is a supremely vitalising force. It was essential also that the first series of Indian cadets should benefit by the traditions of Sandhurst and by its high standard of efficiency, a standard which it may be difficult fully to reproduce in India. Finally, as our witnesses have generally acknowledged, a period of residence in a foreign country, undertaken at an early age, broadens the outlook and gives a knowledge of the world which is of inestimable value to a soldier as it is to others.

16. *The cost of education and military training.*—It has been estimated that for the eighteen months course at Sandhurst an Indian parent who is a military officer and as such is charged reduced fees has to pay approximately Rs. 7,000, while the cost to an Indian parent who receives no concession is approximately Rs. 11,000. If the cadet has received his early education at the Dehra Dun College, this adds another Rs. 5,000 in the case of the soldier parent and another Rs. 10,000 in the case of the civilian parent. It has been represented to us, and we believe it to be true, that expenditure on this scale is altogether beyond the capacity of the average Indian parent belonging to the middle classes : and there can be no doubt that the factor of expense has also deterred candidates from coming forward who would otherwise be suitable. India, it must be remembered, is a very much poorer country than England, and, as we shall show later, Indian candidates for the Army receive at present less pecuniary assistance than is given in many other countries.

17. *Conditions within the Army. Scheme for the Indianisation of eight units.*—When Indianisation in the Army first commenced, the

average Indian boy must naturally have felt some apprehension at the prospect of invading a province previously reserved entirely for British military officers who as a type have the reputation of a certain exclusiveness. The evidence we have heard in regard to this matter reveals, however, a satisfactory state of affairs. The Indian King's Commissioned officers have been well received and have been treated on equal terms with British officers both in the British units to which they are attached for their first year of service and also in the Indian Army units to which they are subsequently transferred. But conditions within the service have altered for the worse, from the point of view of the Indian officer, by the introduction of the scheme for the Indianisation of eight units of the Indian army, which has been described in paragraph 8 of this report. Our Sub-Committee have been informed that the main reason for the adoption of this scheme was a desire to provide a means of testing the worth of the Indian King's Commissioned officers. In time of crisis, it is argued, it might be that if they were mixed in units with British officers any shortcomings they possessed might be concealed, while if they were put to the test by themselves they would have to stand or fall on their own merits, and would have an opportunity of demonstrating that complete reliance could be placed in them. The task thus formulated for the Indian officers of the eight selected units gives them a worthy enough ideal to strive for, but, for reasons which appear to us to be convincing, the scheme has been extremely unpopular almost from its inception not merely with the general public in India, but with the Indian officers whom it directly affects and with most of the commanding officers of Indianising units. The first and almost universal criticism provoked by the inquiries we have made is that to confine Indian officers to these units is an invidious form of segregation and that every Indian officer should be given the same chance of selecting the unit to which he wishes to be sent as a British officer. Several Indians who now qualify for the King's Commission have family connexions with particular units extending over many years, their fathers and grandfathers having held the Viceroy's Commission in them, and it is natural and laudable that they should wish to continue the family tradition. In the case of British officers such a tendency is, we believe, definitely encouraged. But there are objections to the scheme of a more concrete character. In the first place the test as formulated by the authorities is, we think, an unfair one and too severe to impose upon the first generation of Indian King's Commissioned officers who, as we have shown, already have sufficient disadvantages of other kinds to overcome. The scheme is also in conflict with the principle of co-operation between British and Indian which is applied in every other sphere of the Indian administration, for the purpose of securing harmonious work and to increase the efficiency of Indian personnel. Both for psychological and practical reasons the continuance of the scheme can, in our opinion, only

conduce to failure. With Indianisation proceeding in the army in any measure, the only means of ensuring successful Indianisation and, concomitantly, the maximum degree attainable of military efficiency, is to allow Indian officers to serve shoulder to shoulder with British officers each learning from the other in every unit of the Indian Army. This was the original plan and, as we believe, the correct one. There is one other practical consideration to which we attach importance. The Indian King's Commissioned officer is still a new element in the Indian Army to which that most conservative body of men, the Indian rank and file, have not yet had time to become fully accustomed. By the method which we advocate this new element can be absorbed with the least degree of questioning and the least derangement of the existing system of the Indian Army taken as a whole.

In the course of hearing evidence, our attention was drawn to a lecture delivered some time ago at Sandhurst which we were told produced upon the minds of certain Indian cadets who heard it the impression that under the "eight units scheme" no British boy entering the Indian Army would ever be liable to serve under the command of an Indian, and that this was put forward as an argument to induce British boys to enter the Indian Army. Our Sub-Committee ascertained that the India Office authorities knew nothing of this lecture : but the Sandhurst authorities referred the Sub-Committee to the lecture reproduced in Appendix III to this report and added that the impression suggested was not left on the intelligent portion of the audience. We ourselves, however, are definitely of the opinion that certain passages in the lecture are open to no other interpretation than that originally placed upon them by the witnesses to whose evidence we have referred. We do not believe that it was the intention of Government that the "eight units scheme" should have the result claimed for it by the lecturer. The intention if it existed would be plainly mischievous. But we are constrained to observe that the tendency of thought which we find in the lecture is repeated in the following passage from Sir Valentine Chirol's recently published book\* on India :—

"But the racial feeling provoked by the question of Indianising the Army is not confined to the Indians. Though the Army Department may wish now to approach it chiefly from the point of view of military efficiency, it has to reckon with the strong racial objections of British officers to being placed in the position of ever having to take orders from Indian officers. Nor can one ignore the danger of personal friction between British and Indian officers with their very different outlook and social habits if they are made to rub shoulders in a common messroom. But the feeling goes far deeper, and responsible and

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\*The Modern World Series, India, by Sir Valentine Chirol, 1926.

experienced British officers, not unnaturally proud of the confidence and even personal affection of their native officers as well as of their men, are found to declare that the Englishman's prestige with the native troops themselves will be gone if they are ever placed under other than British command. Indians whom education has trained to modern standards of self-respect resent deeply such a stigma of racial inferiority."

The idea that as a result of the introduction of the "eight units scheme" no British officer will ever have to take orders from an Indian officer, is, apart from everything else, fallacious. Before the "eight units scheme" was adopted, there were Indian King's Commissioned officers in other units and they remain there and will continue to be senior to all British officers who join these units subsequently. Moreover regimental units are not watertight compartments : and there are numerous occasions in army life when the officers of one unit come into contact with officers of other units : and on such occasions the senior officer, whoever he may be, takes precedence and command. But, however fallacious the idea may be, the mere fact that it is current is fatal to any prospect of success which the "eight units scheme" might otherwise have had. Suspicion and mistrust have been engendered which it will hardly be possible to remove without the scheme itself being abandoned.

18. *Caste restrictions*.—It has been suggested that suitable candidates may be deterred from entering the Army by the knowledge that the exigencies of army life are liable to interfere with caste obligations. From the evidence which we have heard, however, and from our own knowledge we are satisfied that in the present day conditions of India this is not a serious or wide-spread difficulty. On the contrary, the Indianisation of the Army as it is at present proceeding is likely to have the excellent result of further mitigating the differences of caste and creed. The difficulties arising out of caste restrictions and differences of religious belief have been overcome with marked success in the Dehra Dun College where the boys are specifically prepared for the social and commensal side of life in the army.

19. *Insufficiency of pay and prospects*.—In 1921 the Legislative Assembly adopted a resolution recommending that the pay of Indian King's Commissioned officers should be less than the pay of British officers of the Indian Army, the measure of difference being the amount of "Overseas allowance" drawn by the latter in consideration of their undertaking continuous service in a foreign country. The Government of India have not acted upon this recommendation and we have heard from a number of witnesses that even the existing scale of pay is insufficient for the needs of Indian King's Commissioned officers. We have also been told that boys who would be suitable

for the army prefer to enter the civil services because of the greater pecuniary attractions of the latter. We have considered very carefully the representations made to us, but we do not feel that Government would be justified in increasing pay as a means to obtain a better supply of Indian cadets. Pecuniary aid from Government may more suitably take another shape as we shall explain when we make our recommendations regarding the incidence of the cost of cadets' education and their preliminary military training.

20. *The narrow scope of the present scheme of Indianisation.*—The difficulties and obstacles which we have discussed in the last few paragraphs, however real, are with certain obvious exceptions matters of subsidiary importance. The most substantial reason for the dearth of candidates and one which we believe, after very careful consideration, to be the governing factor in regard to future policy is the extremely narrow scope of the scheme for the Indianisation of the higher ranks of the Army in India which has so far been sanctioned. Recruitment of Indian King's Commissioned officers for infantry and cavalry units of the Indian Army is limited to a maximum of ten per annum for the whole of India : Indians are still not eligible to hold the King's Commission in artillery units, in the military engineer services or in the Royal Air Force : and even the scheme for the partial Indianisation of the Indian Army is avowedly experimental and provisional in character. We are aware that the official view hitherto expressed has been that the basis of the scheme of Indianisation cannot be broadened unless and until a larger number of fit candidates come forward to compete for the vacancies at present available. But we, regarding the matter from a human and practical standpoint and looking to what we believe must be the psychology of potential candidates, are convinced that there can be no hope of real progression so long as the prudent official view, which we have mentioned, is maintained. The enterprise of seeking the King's Commission is still a new and formidable one to the Indian boy, and with the few opportunities offered the risk of failure is very great. In such circumstances it is impracticable to expect material improvement in the quality of candidates or an adequate increase in competition.

We have already said that we believe good potential material to exist which the efforts of Government have not yet succeeded in reaching. This belief is based upon evidence of a substantial and credible character. There are a number of young King's Commissioned officers already in the Indian Army who are pronounced by their Commanding Officers to be efficient, according to the single standard of efficiency which the army recognises : and many of these have reached their present position in the face of far greater disadvantages and difficulties than a British boy has to overcome. The Royal Military College at Dehra Dun which has been in existence for only 4½ years

has shown that even average Indian boys, given proper facilities, can pass with credit not only into Sandhurst but out of it. So far no Dehra Dun boy has failed at Sandhurst and the Dehra Dun boys, as a class, have earned the good opinion of the present Commandant of Sandhurst. Sir John Maynard, formerly member of the Executive Council of the Punjab, who served for forty years in India, has assured us that in the Punjab alone there are many boys who do not appear for the Sandhurst examination but are of better quality than accepted Sandhurst candidates whom he himself had seen. We have similar testimony from other witnesses and also from those of our colleagues who are well acquainted with the standard and type of qualifications required in a King's Commissioned officer.

But in order to attract to a military career the better material we believe to be available it will not suffice merely to remove the subsidiary obstacles which at present exist, it will not suffice to adopt better methods of publicity, to apply more effective propaganda, to introduce a system of open competition for entrance to Sandhurst, and to reduce the cost to the parent of his son's preliminary education and military training. It is also doubtful if it would be considered a practical proceeding to put forth so much effort for the sake of filling ten vacancies : and, above all things, it cannot be expected that the educational authorities in the schools and colleges of India will interest themselves in the special preparation of boys for the Army or will introduce the changes which are certainly necessary in the educational system of the country, so long as the prizes to be gained are limited to 10 vacancies at Sandhurst per annum for all India and so long as the prospects of an Indian boy in the Army are not set upon a more assured and progressive basis than exists at present. Another consideration of importance is that there is reason to believe that the superior attractions of a career in the civil services have already diverted potential candidates for the Army, and it is natural that the minds of parents and of the educational authorities should be impressed with the greater measure of liberality which the Government have recently accepted in regard to the Indianisation of the civil side of the Indian administration. It will be said, and we recognise, that the civil services and the Army cannot be regarded as being on exactly the same plane in the matter of Indianisation. But the difference of treatment which is at present accorded in the two departments of the administration is great and conspicuous : and the result must surely be that the average Indian parent is reluctant to destine his son to a military career, and feels that the Indianisation of the Army is, *in the minds of the authorities*, still suspect and uncertain.

It is not our purpose or desire that the number of Indian King's Commissioned officers in the Army should be increased without reference to considerations of efficiency. We recognise that in the army

there can only be one standard of efficiency, namely the highest. We hold strongly, therefore, that the severity of the existing tests should not be relaxed in any way, and, if Indians capable of satisfying these tests are not forthcoming, then the pace of Indianisation must for the time lag behind the number of vacancies offered. But at the same time we contend that, in order to induce the best material to accept the admittedly arduous preparation for a military career and in order to induce the educational authorities in India to lend their active co-operation, it is necessary to widen the field of opportunity. Apart from reforms in matters of detail, which would not in themselves be sufficient, we can find no other satisfactory answer to our first term of reference.

#### RECOMMENDATIONS.

21. *A substantial and progressive scheme of Indianisation.*—Our primary recommendation is, therefore, that a substantial and progressive scheme for the Indianisation of the Indian Army be adopted without delay, and, subject to an important qualification on the part of some of our colleagues, which we mention later, we recommend the carrying out of the particular scheme which is described in detail in Appendix II to this report. The main features of this scheme are as follows :—

- (a) An immediate increase of 10 vacancies at Sandhurst, making a total of 20 vacancies reserved for Indians. We have assumed that this increase becomes effective in 1928.
- (b) A further increase of 4 vacancies at Sandhurst per annum up to 1933, making the total number of vacancies in that year 38.
- (c) The establishment in 1933 of an Indian Sandhurst with capacity for 100 cadets, to which in that year and each of the two following years, 33 cadets are admitted for a 3 years' course of training.
- (d) When the Indian Sandhurst is established, Indian boys, who prefer it, continue to be eligible for admission to Sandhurst, but the number of vacancies at Sandhurst reserved for Indians is then reduced to 20 per annum.
- (e) The number of Indian boys admitted annually to the Indian Sandhurst increases by 12 every 3 years, and, on the assumption that all cadets are successful, both at Sandhurst and the Indian Sandhurst, the number of Indians commissioned increases correspondingly until, in 1945, half the number of officers recruited annually for the Indian Army consists of Indians.

- (f) By 1952 half the total cadre of officers in the Indian Army are Indians.

Our reasons for recommending the creation of an Indian Sandhurst and the proposals we make in that connexion are contained in a later part of our report. At this point the Indian Sandhurst is mentioned incidentally in order to illustrate completely the suggested scheme of Indianisation.

By 1944 the senior of the Indian King's Commissioned officers now in the Army will have completed 26 years' service and will therefore be due to be considered for the command of regiments. This is the crucial test, and because of this it has been suggested (in the scheme described in Appendix II) that the number of Indians commissioned should not reach 50 per cent. until this stage has been passed. Our colleagues, the Hon'ble Sir Phiroze Sethna, Mr. M. A. Jinnah, Diwan Bahadur Ramachandra Rao, Major Zorawar Singh and Major Bala Sahib Daffé, while agreeing to the principles upon which the suggested scheme of Indianisation is founded, consider that the culminating point of the scheme, that is to say, the Indianisation of 50 per cent. of the cadre of officers in the Indian Army, should be reached at an earlier stage, *viz.*, after 15 years in the case of Mr. Jinnah, Diwan Bahadur Ramachandra Rao and Major Zorawar Singh, and after 20 years in the case of the Hon'ble Sir Phiroze Sethna and Major Bala Sahib Daffé, and that the intermediate stages subsequent to the establishment of the Indian Sandhurst should be correspondingly accelerated. It is, however, unanimously agreed that, whether the slower or the more rapid rate of progression is ultimately adopted, the scheme actually in operation should be reviewed in 1938, that is to say, 5 years after the inauguration of the Indian Sandhurst, with a view to considering whether the success achieved is not sufficiently solid to warrant a further acceleration of the rate of progress.

We have not attempted to carry the scheme beyond the point at which 50 per cent. of the total cadre consists of Indians, and we make no recommendation as to what the ratio of recruitment of British and Indian officers respectively should be after that point has been reached. Again we do not attempt to forecast the time when it may be possible to dispense with the British element in the Indian Army. We also for the present assume, generally, the employment in India of a quota of British troops. We are fully alive to the fact that the progress of our scheme, as of any scheme, must be contingent upon success being secured at each stage and upon military efficiency being maintained throughout. We have given explicit recognition to the possibility that our scheme, if adopted, may itself require to be modified in the light of experience.

On the civil side of the administration the fear has often been expressed, and has to some extent been realised, that Indianisation will cause a falling off in the recruitment of British candidates for the



services. The same phenomenon is liable to occur in connexion with the Indianisation of the Army. As we have indicated in our observations regarding the "eight units scheme", a continued supply of British officers, of the same high quality as those who have served India in the past, will, apart from everything else, be a great and valuable aid for the present and for some time to come to successful Indianisation. We should, therefore, regard it as specially important to maintain the proportion of British recruitment required.

22. *Indianisation in other arms.*—We also recommend that Indians should be made eligible to be employed as King's Commissioned officers in the Artillery, Engineer, Signal, Tank and Air arms of the Army in India and that for this purpose Indians should be admitted to Woolwich and Cranwell until such time as the occasion arises to create corresponding facilities for training in India. We would make it a condition that Indian boys seeking to enter Woolwich or Cranwell should be required to pass the same qualifying tests as British boys. If this condition is accepted, we can find no justification for the exclusion of Indians from the arms of the service which we have mentioned. To exclude them is in fact inconsistent with other recent developments of military policy in this country. The refusal of commissions in the Air Force is in our opinion singularly indefensible because a number of Indians were actually employed as officers in the Royal Flying Corps during the Great War. They rendered efficient service. One was awarded the Distinguished Flying Cross, and he and another of the officers referred to were killed in action. As regards the military engineer services, it may be observed that, in the civil administration, Indians hold, and achieve distinction in, engineering appointments of the most responsible nature.

We recommend therefore that in 1928 eight vacancies should be allotted to Indians at the Royal Military Academy, Woolwich, and two at the Royal Air Force College, Cranwell, and that those numbers should be increased progressively, in due proportion.

23. *Subsidiary recommendations.*—If the measures described in the two preceding paragraphs are adopted, we believe there will then be sufficient inducement for Indian boys of the best and most suitable type to turn their minds in the direction of a military career and to qualify themselves for it by the most strenuous system of training that may be found to be necessary. It will then be worth while to expend both effort and money on removing the various disabilities of a subsidiary character on which we have commented earlier in this chapter. And it will be essential to do so; for our main scheme will ultimately stand or fall by the quality of the material which it succeeds in producing, and which has yet to be produced in the numbers constituting the basis of our primary proposals. Accordingly, we make the following further recommendations.

24. *Improvements in the system of early education.*—We have already discussed the disadvantages imposed upon the average Indian

boy by the defective educational system of India. As regards the remedy to be applied, we think we cannot do better than quote in the first instance the following passages from the Report made to us by our Sub-Committee :—

“ Our observations also led us to realise that there are certain directions in which it is very necessary to improve the general standard of preliminary training of such candidates before they are admitted to the College lest during their course there they are handicapped by comparison with the British cadets who have undergone their earlier education at Public Schools. We make no mention here of character training or of the development of the less tangible qualities which are required in an officer, and refer only to such subjects as can form a definite part of the school curriculum. Under this heading there are three respects in which we gather either from the boys themselves or from their instructors that the average Indian cadet is at a disadvantage. These are English, military training and physical training.” \* \* \* \*

“ Whereas in France and the United States no attempt is made to emulate the English Public School system, and in Canada the attempt is a very small one at present, we have the evidence of the Headmaster of Rugby School that a number of headmasters of French Lycées were in favour of the adoption in France of the English prefect system which plays such an important part in the building up of character and the development of the power of leadership, while the importance of these features are not underrated in the United States where at West Point they are placed in the very forefront of the programme of training at the Academy. The length of the courses there and at Kingston make it possible to do in them much towards the training of character which in England is done in the school stage ”. \* \* \* \*

“ While we recognise that the Indian boy has not the same advantage as the British boy who is educated and trained up under the public school system, and is therefore deficient in certain matters to which reference has already been made, yet at the same time it cannot be forgotten that in countries like France, the United States and Canada there are with a few exceptions no public schools of the English model, but nevertheless they have been able to produce officers of great character who possessed great powers of leadership.”

“ Of all the Indian schools it is only at the Royal Indian Military College, Dehra Dun, which is run as far as possible on the lines of an English Public School, that an avowed

effort is made to supply the wants mentioned in the system of education. The success achieved at that institution in developing the qualities specially required in an aspirant to a commission is amply shown by the records of the Dehra Dun boys who have been at Sandhurst and by the reply of the Commandant of that institution when asked whether from his point of view any difference was apparent in the outturn of any particular type of institution in India—'Dehra Dun an easy first, the rest nowhere'."

"It is not possible for Dehra Dun to supply all India's ultimate requirements in cadets for the Army, nor would it be desirable, even if it were practicable, to rely for ever solely on an official institution like Dehra Dun for the earlier training of these cadets. On the other hand, India cannot afford to establish an elaborate system of preparatory and public schools on the English or any other fresh lines, and, even if such schools were established, there is not to be found in India a sufficient number of parents who would be ready or able to incur the high expenditure which the education of their sons at them would entail. We are convinced as a result that the ordinary Indian schools must continue, if they can, to supply, as at present, their quota of the Indian entrants to the officer ranks of the army. For this purpose it is most necessary that an attempt should be made to secure improvements in at least some of them in order to eliminate the shortcomings to which reference has been made. It is true that even with their present organization and system of training they have turned out boys who have succeeded in obtaining commissions through Sandhurst, but those who did so started on their course of training with an unfair handicap as compared with their British comrades, and that handicap must be removed as far as possible in order to obtain really first class material for India's defence. We believe that, if the importance of the matter is brought to the notice of the educational authorities and their co-operation is enlisted, much can be done even in the existing schools in the direction of eliminating the weak points stated above, and we feel that it will enable a steady flow of really first class material to be obtained. It is, however, unlikely that it will be possible all at once to effect in them all that is required, and the solution of the problem which remains is to incorporate the remainder of the training in the missing essentials which the schools cannot sufficiently provide, in the training at the military college by lengthening the course at the latter."

In these views and recommendations we agree. The main responsibility must rest upon the educational authorities and experts to whom, however, it is imperative that Government should give a clear lead in emphasising the paramount national importance of reforming the educational system of India in the directions we have indicated. But the material success achieved by the Dehra Dun College has been so great that we consider it should be gradually expanded up to a total capacity of 250 to 300 cadets or whatever figure is regarded by educational experts as the most suitable limit for an institution of this character. And later, if circumstances demand it, another school on the same lines as the Dehra Dun College should be opened in some other part of India. We recommend that the first step should be the expansion of Dehra Dun rather than the establishment of other small schools of the same kind, because we find that the existing Dehra Dun College has rendered valuable service amongst other things in diminishing inter-Provincial differences and fostering unity of sentiment such as is indispensable in a national army.

The control of the Dehra Dun College should continue as at present to be in the hands of the military authorities. But while the main object of the College must always be borne in mind, *viz.*, to produce boys for the Army and Navy, those responsible for its administration should be careful to adjust the curriculum and standard of teaching with a view to securing that the course of education given at the College confers a qualification recognised by the University authorities and by the authorities responsible for recruitment to the other Public Services. It might be advantageous to set up an advisory committee, which should include educational authorities of high reputation, to guide the military authorities in regard to the courses of study and the conduct of examinations.

25. *Age limit.*—For the reasons indicated in paragraph 12 preceding, we do not recommend any change in the existing practice and consider that the aim should be for Indian boys to enter the Army on an equality as regards age with British boys.

26. *Publicity.*—The existing methods of publicity may with advantage be continued, but they should be developed and greatly improved; and, just as we consider that the educational authorities should play a greater part than they do at present in the process of selecting candidates for an Army career, so we consider that they should be utilised to a much greater extent for the purpose of diffusing knowledge of an Army career and the means of entering upon it. We recommend that in the first instance the aid of the Registrars of Universities should be enlisted. They should be asked to start information bureaux in consultation with the military authorities and with the help of material supplied by the Army Department of the Government of India. It would be necessary for the Registrars to arrange with the authorities of all schools and colleges, affiliated to their Universities, for the periodical posting of notices in each

institution, drawing attention briefly to the prospects of a career in the Army and to any new development connected therewith, and making known the existence of the main information bureaux as the agency to which to apply for detailed information on the subject.

The official information bureaux which already exist in the various Provinces are also in a position to render valuable assistance, by acting as the source from which information would be available to those who are not in a position to draw upon the University bureaux. It would be desirable, therefore, to secure their co-operation, and they, like the University bureaux, should receive a regular supply of the literature prepared from time to time by the Army Department.

27. *Method of initial selection.*—We have already recorded our conclusion that the present methods of selection are gravely defective and in certain respects open to serious objection. After careful consideration we recommend primarily as a general principle that the basis of selection should be wide and that the method of applying for permission to sit for the entrance examination should be as simple as possible. For this purpose it is desirable, subject to certain conditions, to allow applicants to deal direct with a single central authority at the headquarters of the Government of India. This authority alone should have power to refuse permission to attend the examination.

We recommend that in detail the procedure should be generally as follows. Any boy between the upper and lower age limits prescribed, who has passed the Matriculation or equivalent standard, should be eligible to apply to sit for the entrance examination. As a preliminary he should be required to fill up a form containing such information about himself as the central authority may prescribe. On this form should be recorded a certificate from the principal or headmaster of his college or school (in the case of a candidate educated privately, from his tutor) to the effect that he is educationally, socially, morally, and physically suitable to hold the King's Commission. Having obtained this certificate, the applicant should then forward the application form, together with his Matriculation or corresponding certificate, a medical certificate, and a certificate of birth, to the central authority, indicating at the same time as references two gentlemen of position and standing (other than his principal or headmaster) who have known him for at least three years. The central authority on receipt of this application would, as a rule, consult the two gentlemen cited as references by the candidate, and make such other enquiries as it might think fit. Should the result of these enquiries prove unsatisfactory, the central authority would have power to reject the candidate's application. If, on the other hand, the candidate was found to be *prima facie* suitable, he would be instructed to appear before a military medical board at some suitable centre in the vicinity of his own home, and, provided that the candidate was able to pass the medical test carried out by this board, he would be eligible to appear at the central Army entrance examination.

This examination should consist of two parts, (a) a written test on the model of the existing entrance examination to Sandhurst, (if our proposals for the establishment of an Indian Sandhurst are accepted this examination would require to be so modified as to suit boys who would be on an average one year younger than those who compete at the present entrance examination), and (b) an interview test before a board consisting of two senior military officers of the **Indian Army** who have held the command of Indian regiments, one educationalist, and one non-official Indian gentleman nominated by H. E. the Viceroy. The final nomination would be made by H. E. the Viceroy on the combined results of these two tests. The vacancies announced for competition should be allotted to the candidates standing highest in the order of merit. A certain number of vacancies at the College, not exceeding 20 per cent., should, however, be reserved for candidates to be nominated by H. E. the Commander-in-Chief from among those who have qualified in the two tests, but have not passed sufficiently high to secure one of the vacancies open to competition. We contemplate that the Commander-in-Chief should exercise the power of nomination sparingly and in conformity with the principles followed by the Army Council in their exercise of a corresponding power of nomination for Sandhurst and Woolwich.

In order to prevent unnecessary expense and disappointment to candidates and their parents, and in order also to prevent the examination from being swamped by obviously unsuitable competitors, every candidate should be required, as a preliminary, to appear before a local advisory board in the vicinity of his own home for the purpose of discovering in advance whether he is likely to succeed in the interview test at the entrance examination. Such an advisory board should be constituted in each area in which a military medical board is formed to examine candidates for that examination, and should sit at the same time and in the same place as the medical board, so that candidates when they are ordered to appear for medical examination can at the same time obtain the opinion of the advisory board. These advisory boards should consist of officials and non-officials and should include a proportion of military officers. They should have no power to reject a candidate, but would merely inform him, and the central authority also, in writing, whether they consider him suitable or unsuitable. The candidate should not be bound to abide by the opinion given : if he wishes to take his chance it would still be open to him to pursue his application before the central authority.\*

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\*NOTE.—Dr. Ziauddin Ahmad considers it undesirable that the Local Governments should be replaced by these advisory boards, and would prefer that applications should, as at present, be dealt with in the first instance by Local Governments, who should continue to have the power to reject obviously unsuitable candidates. At the same time he contemplates that principals of colleges and headmasters of schools should be empowered to forward direct to the Local Governments the applications of suitable students, and that Local Governments should be assisted in the process of selection by non-official advisers and suitably qualified military officers.

Candidates should be required to pay all expenses incurred by them in proceeding either to attend the medical board or to sit at the entrance examination.

It may be found desirable in course of time to entrust the whole of the routine connected with the receipt of applications and the conduct of the examination to the Public Services Commission when that body has been fully organised.

In saying that the basis of selection should be wide, we mean *inter alia* that the preference for soldiers' sons, as a class, which is a feature of the present system of selection, should in future become the exception rather than the rule. This is a view which has been urged upon us by many witnesses. The opinion which His Excellency Sir Malcolm Hailey has expressed in regard to this matter is of such interest and importance that we quote it in full :—

“ It may be asked whether it is advisable to continue to show any such preference to the military and land-owning classes, as would seem to imply a desire to exclude men whose families are mainly engaged in commerce or industry or literary pursuits. In one respect, the Punjab differs from other Provinces in the fact that we have here the military material ready at hand, and military traditions already formed ; there is therefore naturally a tendency to draw on a source already known to exist, rather than to seek fresh material for recruitment. With the very rapid spread of education again, the difference between the land-owning and professional classes in point of intelligence is steadily narrowing. Again, it must be recognised that we here have some very considerable knowledge of the mentality of those who comprise the great bulk of the subordinate ranks in the Army. Even if we ourselves had no preference at all for the selection of officers from the land-owning and military classes, most of us are convinced that the Sepoy and Sowar would prefer to serve under men who fall in this category. If the further question were asked whether it is advisable to make this preference a fixed item in our policy, I would myself answer in the negative. I have seen very many men among the professional classes who would, in my opinion, make good officers, and I do not doubt that after a time, the private soldier will himself prefer to be led by a good man, in whose guidance he can trust, whatever may have been his family origin. I think, in short, that the process of education among men who join the subordinate ranks, will have its inevitable result in reducing the preference they may now feel for men of the particular classes. For my part therefore, so far as I am concerned in the selection of candidates

for Sandhurst, I should always be prepared to admit a proportion of men from the professional classes, provided that candidates came forward with the necessary physical qualifications, and with the appearance of having the temperament necessary to make good officers."

We therefore recommend that suitable boys from the professional and other classes should have exactly the same chances as any others. We too have heard the view expressed—it may be regarded to some extent as the natural view of vested interests—that Indian officers should be drawn from the so-called martial classes alone: but on the other hand, there are some Indian officers in the army already who belong to the professional classes, and these have so far proved to be not only efficient, but also, we are told, acceptable to the men.

28. *Grant of King's Commissions to Viceroy's Commissioned officers.*—We recommend that Viceroy's Commissioned officers should be given opportunities of qualifying for the King's Commission analogous to those afforded to non-commissioned officers in the British service. We consider that this will be feasible if a military college is established in India as we propose: and on this basis we recommend that Viceroy's Commissioned officers, in limited numbers, should be admitted to the Indian military college for the purpose of qualifying for the King's Commission. Candidates should be selected by a board similar to that which interviews candidates for Sandhurst: and no candidate should be eligible to appear before the board unless:—

- (a) he is recommended by the Commanding Officer of his unit as suitable in all respects to hold the King's Commission;
- (b) he holds a Special Certificate of Education; and
- (c) he is below the age of 25 years, and has rendered at least 5 years' service in the Army.

A Viceroy's Commissioned officer admitted to the military college should only be required to undergo the last two years, or the military portion, of the course.

We recognise that at the present time the number of officers holding the Viceroy's Commission who would satisfy the above conditions is small, the reason being that direct Viceroy's Commissions are now seldom, if ever, granted, and that the standard of education prevailing amongst the classes which enlist in the ranks of the Indian Army is as a general rule very low. We, therefore, consider it desirable that special educational facilities should be afforded to the children of these classes so that the best of them may have a practical



chance in future of rising through the Viceroy's Commission to King's Commissioned rank. We understand that a scheme is now under consideration, and has indeed already been initiated on a small scale in the Punjab, for this purpose. We refer to the King George's Royal Indian Military Schools established at Jhelum and Jullundur and the promised Kitchener College. A scheme of this kind would be specially appropriate to the requirements of the Viceroy's Commissioned officer class, and would in our opinion deserve support.

29. *Grant of University Commissions.*—We have considered the possibility of increasing the supply of candidates by means of the grant of direct commissions to suitable graduates of Indian Universities, but we do not recommend this. Indian Universities are at present in a state of transition, and it would be premature and infructuous to introduce such a system. The question may be revived with advantage at some future time, but the decision will always depend, *inter alia*, on the extent to which Indian Universities are prepared to adapt their system to military requirements, and, for example, to introduce short courses on military subjects, as has been done by some Universities in the United Kingdom.

On the other hand, we recommend that direct commissions be granted to suitable Indian graduates of British Universities, and that, to make this effectual, Indians may again be made eligible for admission to the Senior Division of the Officers' Training Corps. They were so eligible during the Great War, and we are strongly of opinion that the barrier which has since been set up should be removed. We understand that this is already the view of the Government of India.

Our Sub-Committee has supplied us with the following report on this subject :—

“ The India Office informed us that they had given their full support to the proposal to admit Indians to the Officers' Training Corps. The War Office gave us as the basic reason for their present attitude of opposition to it the fact that the Officers' Training Corps is primarily intended to train potential officers for the Territorial Army, a force to which Indians are not admitted and to which undoubtedly, having regard to the conditions of service in it, it is not likely that Indians would be able or willing to belong, even if it were open to them to do so. That being the case, it is intelligible that the War Office should be unwilling to spend money from their budget on training material which when trained would not be of any use to them, unless it could be proved to them that this material, although of no use for the purposes of the Territorial Army in England, would be employed to advantage elsewhere in the military forces of the Crown. The India Office, while

favouring the admission of Indians to the Officers' Training Corps, have not, we gathered from the War Office representative, as yet put forward a strong enough case to convince the Army Council on this point. There are certain aspects of the case to which our attention has been drawn which we find have not been laid before the Army Council. For instance, it would be a great advantage to India, if Indians resident at British Universities were allowed to enjoy the benefit of the Officers' Training Corps training because the military instruction they would get in this manner would be of inestimable value to them if they joined the Territorial Force in India on their return there. Again, we understand that, there being no bar in the present regulations which keeps Indian undergraduates from competing for the direct commissions in the Indian Army which are open to British students, yet such boys would be deterred from coming forward as candidates for these commissions because they would not be able to obtain any antedate such as is given to British candidates by reason of their not having been allowed to serve in the Officers' Training Corps. These are two points which have never been represented to the Army Council, but which ought to form a basis for re-opening the case for the admission of Indians to the Officers' Training Corps. At the same time, it was represented to us by the Cambridge University authorities that a part of the opposition is based also on the fear that the British undergraduates might object to the admission of Indians to these organizations, and that as a result recruiting for them might be affected adversely if they were admitted. It was further impressed upon us by them that they recognised that the success or failure of such voluntary organizations as the Officers' Training Corps are, even though they are controlled administratively and financially by the War Office, depends largely on the co-operation of the undergraduates. These latter are under no sort of compulsion to join the Officers' Training Corps and their likes and dislikes cannot be lightly disregarded. The authorities, when asked definitely and categorically, admit that they have little or no tangible grounds on which to base their apprehension that recruiting may be affected by the admission of Indians, but they are clearly averse from making any experiment in the direction of allowing them this privilege in case it may interfere with the prime object of the organization."

With these observations we agree : and we recommend that, if necessary, the cost of training Indian undergraduates in the Officers' Training Corps should be borne by the Government of India.

30. *Grant of commissions to Territorial Force officers.*—We are aware that in the United Kingdom commissions in the regular army are granted to suitable officers of the Territorial Army. We are, however, of opinion that the Territorial Force movement in India is not yet sufficiently developed to warrant the adoption of a corresponding practice for the present.

31. *Cost of education and training.*—Our Sub-Committee have pointed out to us that in the other countries which they visited the greater part of the expenses of the preliminary training of a cadet at a military college is borne by the State, and that the parent of a boy at Sandhurst, unless by reason of his previous service in the armed forces of the Crown he receives a remission of fees, has to pay a greater share of the cost of his son's training than is required of a parent elsewhere. In the United States the Government grants the cadet while he is under training at West Point a rate of pay (1,072 dollars a year) sufficient to cover the cost of his training and subsistence, and to leave a margin from which to purchase his initial outfit when he obtains his commission. In France the fees, in the case of boys at St. Cyr, are varied to suit the means of the individual parent, as well as being regulated by the services which the parent may have rendered to the nation. About 50 per cent. of parents pay no fees at all. In Canada the cost of the training given at Kingston is fixed at a level fully 50 per cent. lower than the cost of an education of corresponding standard at a Canadian University. While we are opposed to any undue cheapening of education, we feel that the French or Canadian model is better suited than the English model to the circumstances of a relatively poor country like India. We therefore recommend that the fees at the Indian military college when it is established should not exceed an amount which can be paid without hardship by parents of the classes which will provide most of the cadets, namely, the upper and middle classes. The rate finally fixed should include all expenses arising in connection with the college course except pocket money, holiday expenses and travelling expenses.

We recommend in addition that Government should provide scholarships for 20 per cent. of the boys who pass into the college annually. Half of these scholarships should be granted to those who stand highest in the order of merit at the competitive entrance examination, and half to sons of soldiers who without them would be debarred for financial reasons from entering the college. Some of these scholarships, on the analogy of the King's Cadetships which are granted to British boys whose parents have been killed or have died on active service, should be fixed at an amount which will cover part of the expenditure incurred on the boy's earlier education at Dehra Dun, if he has been educated there. Apart from this we do not recommend any modification of the existing arrangements regulating the incidence of the cost of education at the Dehra Dun College

though we should welcome the establishment, through private generosity, of scholarships intended to meet part of the parent's liability.

In addition to the grant of Government scholarships at the Indian Sandhurst we should be glad to see the endowment of scholarships from private sources at that institution also for the benefit of boys of particular provinces, classes, communities, or of particular Indian States.

The foregoing recommendations do not apply to the case of those Indians who after the establishment of an Indian military college elect to receive their military training at Sandhurst. They will presumably be the sons of well-to-do parents, and we do not think they should be given any greater pecuniary assistance than that which is given at present to Indian boys proceeding to Sandhurst.

32. *The "eight units scheme"*.—For the reasons fully given in paragraph 17 preceding, we recommend that the "eight units scheme" be abandoned and that Indian King's Commissioned officers, like British officers, be eligible to be posted to any Indian unit of the Indian Army.

There should be the less objection to this for the reason that the time is fast approaching when one of the essential features of the scheme will for purely mechanical reasons have to be omitted. When all the appointments of company officer in the eight units have been filled by Indians—and this at the present rate of progress will be the case in the course of the next two years,—no further Indian officers can be posted to those units except to replace an unexpected casualty, until the senior company officers qualify, by length of service and merit, for selection as company commanders. This will mean an interval of some years during which even the present intake of Indian officers from Sandhurst would have to be posted to other units.

33. *Pay and allowances, including marriage allowances.*—We do not recommend any change in the existing practice. For the present Indian King's Commissioned officers should continue to receive the "overseas" or, as it is termed in the Indian Army, the "Indian Army" allowance. In consideration of this, and for other reasons also, they should continue to be subject to the same rule as British officers in the matter of marriage allowances, *i.e.*, they should not be eligible to receive marriage allowances, although they are married, until they reach the age of 30. Incidentally, we desire to express the opinion that married students should not be allowed at the Dehra Dun College, or married cadets at Sandhurst and the Indian Sandhurst. This rule might perhaps be relaxed in the case of Viceroy's Commissioned officers and Indian State officer cadets admitted to the Indian Sandhurst.

34. *Guardianship of Sandhurst cadets.*—The question of guardianship is a difficult one to solve, and it will be admitted, as a general principle, that no system of guardianship, however good it may be,

can equal the natural guardianship of a parent. This is one of the reasons why we have decided to recommend the establishment of a military college in India. But, as we also recommend that Indians who prefer it should continue to receive their military training at Sandhurst, we have to consider what steps are necessary in order to improve the existing arrangements for official guardianship at Sandhurst which, as we have said elsewhere, we find to be highly unsatisfactory.

We are of opinion that those who are in a position to do so should select their own guardian, as the boy will then receive more individual attention than he could hope to receive from an official guardian. The guardian should be a personal friend of the parent. He should be a person of mature age permanently resident in England, and preferably an ex-member of one of the Indian Services, and the India Office should be furnished with the name and address of a guardian so appointed.

For those boys whose parents are not in a position to secure the services of a personal guardian, there should be an official guardian who should be very carefully selected by the India Office with the concurrence of the Government of India. The essence of the matter is that the Indian boy at Sandhurst should have someone always at hand whom he can regard as a friend and as a protector, to whom he can turn for sympathetic advice and guidance, and in whom both the parent in India and the son at Sandhurst can feel that they have implicit trust. It is probably desirable that the official guardian should be a retired officer of the Indian Army, whose experience should make it specially easy for him to assist the boy in adjusting himself to the military atmosphere and conditions of life in the Royal Military College. It will, however, be of the utmost importance that the duties of the official guardian should be comprehensively and precisely defined. In Appendix IV of this report, we have added a draft of the instructions which we think might suitably be issued to the official guardians appointed from time to time : and since the duties and responsibilities therein prescribed will be onerous, we consider that the official guardian should receive reasonable remuneration in addition to whatever pension he may have earned.

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## CHAPTER III.

## THE SECOND, THIRD AND FOURTH TERMS OF REFERENCE.

- “(b) *Whether it is desirable and practicable to establish a Military College in India to train Indians for the commissioned ranks of the Indian Army.*
- (c) *If the answer to (b) is in the affirmative, how soon should the scheme be initiated and what steps should be taken to carry it out.*
- (d) *Whether, if a Military College is established in India, it should supersede or be supplemented by Sandhurst and Woolwich so far as the training of Indians for the commissioned ranks of the Indian Army is concerned.”*

35. *The second term of reference. Establishment of an Indian Sandhurst recommended.*—In the latter part of paragraph 15 of our report we have mentioned briefly the special advantages which Indian boys enjoy by receiving their military training at Sandhurst. Our Sub-Committee, having seen Sandhurst, have made the following observations on this subject :—

“Sandhurst.....is a great institution with the traditions of years behind it and a staff which includes the cream of the instructors available in the whole British Army. It has in its immediate vicinity the Staff College and the large military training centre of Aldershot, and is at only a short distance from the War Office in London, so that it is in a specially favourable position from the point of view of keeping in touch with all the latest military ideas. At it also the Indian cadets are trained side by side with the future British officers with whom they will for some time to come have to serve in the Indian Army. All of these advantages could not, at first at any rate, be secured to the same extent at an institution in India.”

To this should be added the very pertinent observation of the Commandant of the Royal Military College, Sandhurst, to the effect that Indian boys at Sandhurst are stimulated in their military training by being “up against a better team”, i.e., the British boys at the same institution, who for the reasons which we have given are in present circumstances superior to the average Indian boy who enters Sandhurst. The facts are, however, well known, and it is unnecessary to enlarge further on this aspect of the matter.

In paragraph 15 and in other passages of our report we have also set out the objections to Sandhurst, viewed from the standpoint of the average Indian parent, and, although we have said that the weight of these objections is diminishing, we find that something substantial remains : and we cannot feel assured that the difficulties

which at present stand in the way of Indian boys being sent to Sandhurst could ever be wholly removed. The great expense—particularly that incurred on account of the boy's holidays—and the separation of parent and son—with all that separation in this case implies—are, we fear, deterrents of a permanent character.

Accordingly we find at once one strong reason for the establishment of a military college in India which will provide the facilities at present given by Sandhurst alone. It seems clear that, like the progressive scheme of Indianisation which we have suggested, this step also is necessary as a means to improve, both in number and quality, the supply of Indian candidates for the King's Commission.

Further it is, in our opinion, very desirable, and would be consonant with the general policy of the administration as that is now conceived, that India should have a military college of her own and thus be self-sufficient in respect of one of the most important of national needs. It is, indeed, universally recognised that the establishment of an Indian Sandhurst is ultimately inevitable, and we think military opinion will agree that it would be an immediate necessity if war on a considerable scale were to break out. If that is so, then it is obvious that it would be better to have a military college already in being and fully organised than to be dependent upon improvisation after the emergency has arisen. The latter was what had to be done during the Great War, when the cadet colleges at Quetta, Wellington and Indore were hurriedly set up. On these grounds alone we think it would, in the judgment of many, be sound policy to lay the foundations of an Indian military college as soon as possible and so commence without delay not merely the building of the college structure, but the building also of the tradition and sentiment which in India, as in England, would be indispensable to the achievement of success. The process is one which takes time, and the start should not be postponed.

There is one other consideration of a specially practical and compelling character. In every educational institution there comes a time when the authorities responsible for its efficiency must decide to set a limit to the further acceptance of foreign students for fear lest the character of the institution may be changed. This point of view was very clearly expressed in 1921 by Sir Theodore Morison, K.C.S.I., Principal of the Armstrong College, Newcastle-on-Tyne, in a statement prepared for the Indian Students Committee, a Committee presided over by Lord Lytton, then Under Secretary of State for India :—" I beg the Committee to realise that no University can absorb more than a limited, and rather small, number of foreign students. A University is a corporate body with traditions and a certain characteristic tone ; it has a personality which is distinctive, of which it is proud and which it desires to retain. This personality

would be destroyed or distorted by the influx of a large number of strangers, and no University would tolerate this transformation."

This proposition is at the least as true of an institution like Sandhurst as it is of a University ; and it is plain that we have here a factor which has a very important bearing upon the problem we are considering. Our Sub-Committee, while in England, raised the question directly with the authorities, and tried to obtain a pronouncement as to the ultimate limit up to which they would be prepared to admit Indians to the military colleges in England. A definite reply was not given. It appears that the authorities would be willing for the present to accept Indian cadets up to a maximum of 5 per cent. of the establishment of each college, that is, 30 cadets at Sandhurst and 12 at Woolwich, but would not be prepared to commit themselves to the possibility of any further increase until the effect of these numbers on the personality of the institutions had been tested by actual experience. They do not definitely exclude the possibility of a further increase, but the Commandants of the two institutions concerned, by whose advice, we imagine, the Army Council would be largely guided, gave it as their decided opinion that 5 per cent. of the establishment was the absolute limit up to which Indians could safely be admitted. This figure coincides with that mentioned as a maximum by Sir Theodore Morison in his evidence before the Indian Students Committee, and it seems to us to be highly improbable that the Army Council would in the end agree to admit Indian cadets to Sandhurst and Woolwich in larger numbers than this, except as a temporary measure or under special circumstances. If this is so, then it is clearly advisable that India should cease to rely solely upon an institution, training at which is even now not wholly suited to the circumstances of Indian boys, and which can only be reckoned upon for so narrowly limited an outturn of Indian King's Commissioned officers.

It is hardly necessary to add that there is a strong political demand for the establishment of a military college in India. In a matter of this kind we should not ourselves attach great importance to considerations of a purely political character ; but in the case of the Indian Sandhurst the political demand represents, we believe, a real force of growing national sentiment which cannot be ignored.

Having given our most careful consideration to all the factors involved, we have come to the conclusion that the establishment of a military college in India for the purpose stated in our second term of reference is desirable.

36. *The practicability of the step.*—Our Sub-Committee during their visit to England discussed with several officers of experience, including the Commandant at Sandhurst, the practicability of reproducing in India the training now given at the Royal Military College. The answer they received in each case was that, given the necessary material, there should be no insuperable difficulty in providing this



form of training at an Indian military college. It will be difficult, however, for the Indian institution to be quite as efficient as Sandhurst itself because the latter will naturally have preference in the choice of instructors and will also continue to have, by reason of its location, certain physical advantages which cannot be transferred to India. But we have before us the examples of the Kingston and Duntroon Military Colleges in Canada and Australia respectively, where similar disadvantages have been neutralised, and a high standard of efficiency has been achieved; and we wish to make it clear that our recommendation is subject absolutely to the condition that no pains are spared to place the machinery of the Indian military college on the highest plane of efficiency which India can attain. In all military essentials the model of Sandhurst should be closely followed. The instructors should be mainly British officers, and should be picked men. If necessary, specially attractive terms of remuneration should be offered in order to secure teachers of the highest capacity and reputation. It is natural that we should emphasise these *desiderata*, since obviously the first essential is that the officers produced at the Indian Sandhurst should be efficient. But a more specific consideration is that the commissions granted to boys trained at the Indian Sandhurst must be King's Commissions, conferring, so far as the Army in India is concerned, *i.e.*, both British and Indian troops, the same status, authority and precedence as the King's Commissions granted to cadets trained at Sandhurst. As our remarks at the commencement of paragraph 6 preceding show, this is a paramount and self-evident necessity. The experiment of the Imperial Cadet Corps was a failure because the officers commissioned therefrom did not possess sufficient powers of command to rise above the position of company officer in the Indian Army, and from the purely practical point of view there can be no compromise in regard to this matter. Indian officers, if they are to pull their weight in the Army in India, must be empowered, like their British comrades, to take command of other British officers junior to themselves and to take command of mixed bodies of troops. But the immediate implication is that the methods of training pursued and the qualifications obtained at the Indian military college must conform to standards acceptable to the Army Council. We should not in any case desire to postulate a lower standard of efficiency for Indian officers trained in India; but we recognise clearly that, apart from any consideration which might influence ourselves, the Army Council must have the right to decide what standard of training and qualification is to be regarded as adequate in the case of any officer who is to hold the King's Commission and have authority over British troops. We note that quite recently the Army Council have recognised a Dominion Commission in the Canadian Permanent Forces as equivalent to the regular King's Commission.

37. *The third term of reference. The military training systems of other countries.*—Our next question relates to the form of organisa-

tion which should be prescribed for the Indian Sandhurst ; but we will first review the information supplied to us by our Sub-Committee regarding the systems of training followed in the countries which they visited. In England and France the courses at the military colleges are of 1½ and 2 years' duration respectively. Apart from the training given at the Ecole Polytechnique, which is not a military college in the accepted sense of the term, the courses are of a purely military nature, and all cadets who succeed in them receive commissions in the Army. At the Royal Military College, Kingston, in Canada, the cadets undergo a four years' course which includes not only a training in military subjects, but also a large element of academic study, and particularly a training in civil engineering, which is recognised by Canadian Universities as equivalent to a considerable part of their own course. Unlike the cadets at military colleges in other countries, the cadets at Kingston can, when they graduate, either take commissions in the Army or enter another of the public services or adopt a civil profession, whichever they prefer. In practice the majority of graduates from the College choose employment in civil life. The United States Military Academy at West Point also has a four years' course, but all its graduates have to take commissions in the Army. Here, too, the course includes both military and academic subjects.

These various systems of training appear to have been determined partly by the requirements of the particular form of military organisation prevailing in each of the countries mentioned and in part also by differences in the range and efficiency of the earlier education which boys are able to obtain before entering the military college. England and France maintain comparatively large standing armies, and therefore considerable numbers of young officers have to be produced every year. If it were necessary for these numbers to undergo a lengthy course of training, both military and academic, on the American model before they received their commissions, this would add intolerably to the burden which the cost of their defence already lays upon these two countries. Both in England and France, however, the systems of civil education are developed to a high degree, and these produce, without material cost to the State, boys who can be brought to the standard required to fit them for commissions by a comparatively short intensive course of a purely military nature. Moreover, the fact that, after being commissioned, the officers of these nations spend the majority of their service in regular units of a standing army makes it possible to rely on the experience which they thus receive to put the finishing touches to their initial military education. In the United States the regular forces maintained are small, and consist largely of cadre formations which would be expanded considerably on the outbreak of war. It is recognised, however, that, while the training of the rank and file can be carried out in a comparatively short time on mobilisation, provided sufficient trained officers are available for the purpose, the training of efficient officers is a lengthy process. The United States Army therefore includes a

large cadre of officers, out of proportion in time of peace to the strength of the regular rank and file, so that it may have available on mobilisation the instructors and staff officers required for its expanded strength. In time of peace, too, American officers are largely employed on instructional and other duties with non-regular formations, and the fact that for these purposes they require a broader military knowledge at the start of their career, and have comparatively less chance of perfecting their training in regular units after they receive their commissions, renders necessary a longer course of initial training at the military academy than is found to be necessary in England and France. This is not, however, the sole reason for the introduction at West Point of a course of four years' duration and for the inclusion in it of such a large element of academic teaching in addition to purely military studies. On the one side the United States Army authorities demand a high standard of general education from their officers, but on the other they are faced with the difficulty that the standards of education in different parts of the country vary very considerably. Since therefore the regulations for entry to West Point expressly provide for the recruitment of cadets from all parts of the country, it is necessary to suit the curriculum of that institution to the standard of those who come from districts where the educational system is less highly developed; and it is found that the task of raising the educational standard of the average boy up to the prescribed level, while at the same time providing him with his military education, involves a course of the present length. In addition the Army authorities do not regard as sufficient for their needs the training of character included in the earlier education of the average American boy, and they insist on special attention being paid to this department of the course of training at West Point. The development of character cannot, however, be assured in a course of only one or two years' duration.

The reasons underlying the introduction at Kingston of a four years' course of training do not differ materially from those which have led to the adoption of a course of that length at West Point. The military organisation of Canada is similar, though on a much more limited scale, to that of the United States, and the efficiency of her educational system also varies in different parts of the country. In Canada, however, the number of officers required each year for the permanent forces is so small that under present day conditions it would be next to impossible to organise a really efficient military college for such a number alone, and it is therefore necessary to increase the college to the proper size by including in it cadets who do not intend to make the Army their career. The importance of enabling such cadets to compete on graduation on level terms with their contemporaries from the Universities is one of the additional factors which necessitate the inclusion in the course of a large measure of academic study and the consequent lengthening of the period of study. The value of this type of education, combined as it is with

military discipline and character training over an extended period, is proved by the fact that employers in civil life almost invariably show preference to Kingston graduates over men trained elsewhere, because they find that their broader outlook and higher sense of discipline make them more adaptable and reliable in positions of responsibility.

38. *Combined general and military education.*—While India is on the same footing as England and France in that she requires a regular supply of officers for service in a large standing army, she has something in common also with Canada and the United States in that the civil educational system is at present defective and cannot be so improved in the near future as to ensure that the generality of cadets, when they first arrive at the military college, can be turned into really efficient officers after only a short period of military training. We feel therefore that the course at the Indian military college should be longer than the course at Sandhurst and should in addition to the military subjects include a period of academic study as well, by means of which the cadets will be enabled to improve their general education and their knowledge of colloquial English. It is also important that the academic standard attainable at the end of the course should be so framed as to secure specific recognition from the Universities and to enable cadets who for one reason or another are found unfit for commissions in the Army, but are suitable for other careers, to continue their education at a University, without interruption and on a level with their contemporaries in age.

39. *A three years' course.*—Our recommendation therefore is that the course should last for three years, of which the first year should be devoted mainly to academic study and the last two mainly to military training. A longer course of this nature will have the further advantage that it will give those cadets who are drawn from the ordinary Indian schools a better opportunity of developing in character and physique than would be afforded if they were to remain at those schools for a further year and a half, and then undergo a short course of a purely military nature. Our intention is that boys should be eligible to enter the military college after passing the Matriculation standard. This will enable them to obtain their commissions at approximately the same age as British cadets passing out of Sandhurst; and the task of completing the formation of their characters will be rendered less difficult by the fact that on entering the college they will still be comparatively young.

40. *Training for other public services.*—In the present stage of India's development we can see many reasons in favour of adopting a system somewhat similar to that in force in Canada under which graduates from an Indian military college would be eligible to enter other departments of Government service besides the Army. We fear, however, that it would at the present time be infructuous to suggest the adoption of any scheme of this nature. The difficulties in

the way of carrying it out would be very great. An attempt has already been made to secure the promise of other public employment for Dehra Dun boys who fail to qualify for the army for some reason which does not affect their suitability for other forms of service, but this has not been successful. The Local Governments, and not the Government of India, have in their hands the great bulk of Government appointments, and we can see that it would not be easy for them to bind themselves to give preference to candidates from the Indian Sandhurst. Other schools and colleges also would have cause for complaint, and it is important that, as co-workers in the general progress of India, their goodwill should not be alienated.

41. *The link with the Dehra Dun College.*—Our scheme contemplates that boys drawn from the Prince of Wales' College at Dehra Dun and from the ordinary Indian schools should enter the Indian Sandhurst at approximately the same age and after qualifying at the same competitive examination which we have described in paragraph 27 preceding. To be eligible to sit for the competitive examination a boy educated at one of the ordinary schools will be required to have passed the Matriculation standard. He will be able to accomplish this between the ages of  $16\frac{1}{2}$  and  $18\frac{1}{2}$ . This involves a slight alteration in the existing system at the Dehra Dun College. At present boys are admitted to the Dehra Dun College between the ages of  $11\frac{1}{2}$  and 12 years, and remain there until they are 18 or 19 years of age when they enter upon the eighteen months' course at Sandhurst. We think it important that the period spent at Dehra Dun should, as at present, be at least six years. To admit of this and to secure at the same time that boys educated at Dehra Dun will commence the three years' Indian Sandhurst course at the same age as boys educated elsewhere, we recommend that the age limits for entry to the Dehra Dun College should be reduced to 10— $11\frac{1}{2}$  years. Any Dehra Dun boy who wishes to enter Sandhurst instead of the Indian Sandhurst should be permitted to remain at the Dehra Dun College for an extra year in order to complete his preparation for the Sandhurst examination.

42. *Indians should continue to be trained at Sandhurst.*—As we have indicated in earlier passages of this report we are of opinion that, even after the Indian Sandhurst has been established, Indian boys who prefer to receive their military training at Sandhurst in England should be allowed to do so up to a maximum of 20 per annum. We have reason to believe that the authorities would be prepared to accept this, provided that such Indian boys as desired to go to Sandhurst qualified for admission by the same test as British boys. We agree that it would be proper and desirable to impose this latter condition. Any vacancies at Sandhurst not actually taken up by Indians should be added to the establishment of the Indian Sandhurst.

We attach very great importance to the recommendation here repeated ; for to continue to have a proportion of Indians under

training for the Army at British institutions would assist in maintaining the Imperial connection in military matters ; and we believe that this is necessary both in the interests of India and of the Empire as a whole. We have not overlooked the fact that, if King's Commissioned Indian officers are trained simultaneously in institutions in India and in England, there may be a tendency, prejudicial to the service as a whole, for those who have been trained at the older and more famous college to look down on those who have been trained at the newer institution. This is a possibility which may react disadvantageously upon the military college in India at its start, and make it more difficult for it to establish its reputation and build up its traditions. We do not, however, consider that it is a sufficiently important factor to outweigh the compensating advantages on the other side of the scale, particularly as the majority of the British cadets posted to the Indian Army will most probably obtain their commissions through the English Sandhurst, and we think it specially important that some at any rate of the Indian King's Commissioned officers should receive their first military training in association with British cadets who are themselves destined for the Indian Army.

43. *The Sandhurst entrance examination.*—Indian boys who have received their early education in England and who desire to proceed to Sandhurst should be enabled to sit for the Sandhurst entrance examination in England. For Indian boys who have been educated in India, either at Dehra Dun or elsewhere, we consider that a Sandhurst entrance examination should be held, as at present, in India, the standard of the examination being precisely the same as that of the examination held in England. We would, however, suggest that, for the examination held in India, Urdu should be allowed as an optional subject. We understand the Army Council have no objection to this.

Indian boys educated in England who desire to receive their military training at the Indian military college should of course be required to qualify for admission by the same tests as are applied to other candidates.

It would in our opinion be very desirable that British boys who wished to enter the Indian Army should, if they were willing, be permitted to receive their military training at the Indian military college. Here again the association of boys of the two races would be advantageous. We know there are difficulties in the way, but nevertheless we recommend that the door of the Indian military college should be kept open to British cadets, and that those who are able to overcome the difficulties we have in mind should be heartily welcomed.

44. *The strength of the Indian military college.*—It would be obviously impracticable and uneconomical to start an Indian military college so long as the maximum number of commissions for which Indians are eligible is ten annually, and we should not recommend

this, although we understand that the Kingston and West Point Colleges started with an establishment of only 18 cadets and the Duntroon College with an establishment of 35 cadets. The expert evidence we have received indicates that the desirable number of cadets for the starting of an Indian military college, if it is to have an efficient military organisation, is 100. We accept this as the initial number to be aimed at, and we propose that the college should be inaugurated with an intake of 33 cadets a year for the first 3 years, the establishment of 100 being reached in the year in which the first batch of entrants commence the last year of the three years' course of training. The subsequent expansion of the college should follow the lines indicated in paragraph 21 of our report and in Appendix II, where we have described the progressive scheme of Indianisation which we advocate.

45. *The Indian military college to be established in 1933.*—We have already given reasons for the view which we hold that the Indian military college should be started as soon as possible. We now definitely recommend that the date of inauguration should be 1933. If the prospects of Indians in the Army are enlarged on the lines we have proposed and if the interest of potential candidates and their parents and of the educational authorities is quickened to the extent we anticipate, the number of cadets required to start the college should be forthcoming by the date we have mentioned : and the interval will be sufficient for the necessary buildings to be constructed and for other administrative arrangements to be completed. Moreover the number of Indian candidates available would then have passed the limit which we have assumed that Sandhurst could absorb.

46. *The fourth term of reference. Supplementary training in England.*—Our scheme of training at the Indian military college as so far outlined is defective in one important respect, which we have ourselves acknowledged, namely, it does not provide, save to a very limited extent, for that association between British and Indian boys, who are both preparing for a career in the Indian Army, which is a valuable feature of the present system ; and it does not give the Indian cadet the opportunity to travel abroad and see the world. To remedy this, it has been suggested that the Indian cadet after qualifying at the Indian military college should undergo a supplementary course at Sandhurst. We are satisfied, however, that this would not be a feasible proposition, as the Indian students would already have been commissioned, and could not be introduced into an institution where the other students are only cadets. We recommend therefore that to complete their preparation the Indian cadets, having been commissioned, should be attached to a cavalry or infantry unit in the United Kingdom for a period of one year.

47. *Training in the technical arms.*—Our conception of the Indian military college is that in the first instance it should merely

take the place of Sandhurst. At a later stage of development it may become a combined institution providing also the facilities of Woolwich. But, for the present, as we have said in paragraph 22 of our report, we consider that the first contingents of Indian cadets who are allowed to qualify for the Artillery, Engineer, Signal, Tank and Air arms should receive their preliminary military training at Woolwich and Cranwell. We think it desirable that an opportunity should be given to Indians of acquiring the traditions of these British institutions, and the arrangement will generally be more efficient and economical than the provision at the outset of duplicate facilities in India.

Indian cadets, who qualify at Woolwich, and, later, those who qualify in India by the course corresponding to that of Woolwich, should complete their initial training in exactly the same way as the British cadet does at present, *i.e.*, by attending courses at Chatham and Cambridge in the case of Engineer officers, and at Larkhill in the case of Artillery officers. The Cambridge and Chatham courses could no doubt be reproduced in India, and in the case of the former the existing engineering establishments, such as Roorkee, might, when the time comes, provide the nucleus of a counterpart. But, so far as we can see, it will be long before it would be economical to duplicate machinery of this kind : and for a very considerable time also it will be desirable, on the score of efficiency, that British and Indian officers should receive their " post graduate " technical training from the same source.

It will probably be desirable that both the questions discussed in this paragraph should be re-examined when the review of 1938, which we have recommended elsewhere (*vide* paragraph 21), takes place.

#### MISCELLANEOUS.

48. *The Indian States*.—It seems probable that a number of the Indian States would be glad to avail themselves of the benefits of the training available in the Indian military college, if one is established, for the purpose of giving higher training to some of the officers of their State Forces. We believe that the participation of the Indian States in the college would be an advantage to India as a whole, as tending to increase the efficiency of the Indian State Forces, and we recommend that a certain number of vacancies be reserved for Indian States at the college over and above the number of vacancies available for candidates who seek commissions in the regular Indian Army. It will, however, be essential that such cadets from Indian States would be prepared to undergo precisely the same course of education and training as Viceroy's Commissioned officers, that is, the two years' military course, and we contemplate further that the cost of their training should be borne by the Indian States in whose forces they are ultimately to be employed. We contemplate that subjects of Indian States should continue, as at present



to be eligible for King's Commissions in the regular Indian Army, and candidates of this category should consequently be eligible for admission to the Indian military college on the same terms as residents of British India.

49. *Questions of detail and finance.*—We have deliberately refrained from entering into questions of mechanical detail connected with the establishment of a military college in India. We have said that the college should follow closely the model of Sandhurst. That is a point of principle. Questions such as the location of the college, the type and quantity of buildings required, the equipment of the college and the strength and composition of the staff can suitably and without difficulty be settled by Government and their expert official advisers, if and when it is decided to accept our recommendations on the main issues of policy. We are not indeed qualified to deal with such questions of detail, and it would be a waste of effort on our part to make the attempt.

Similarly we have refrained from entering into matters of finance, and we are content to quote what H. E. Sir Malcolm Hailey has said on this aspect of the creation of a military college in India.

“ This contemplates a somewhat lengthy and extended course of education, but I am unable to see any reason for refusing the claim that the State should bear a very considerable part of the cost. We spend large sums on our professional and educational colleges, and since we have definitely decided that the military career must be opened to Indians it is clearly a justifiable expense to secure the best men possible. Taking the country as a whole the sum we should be spending on military education—though the number of officers might not in themselves be large—would be small in comparison with what we should be spending on types of vocational education which are in some cases of lesser importance.”

\* \* \* \* \*

“ Within reason I do not think we should allow finance to stand in our way in this respect.”

With this opinion we agree, and we need only add that at present sums of £80,000 on account of Sandhurst and £30,000 on account of Woolwich are being paid annually from Indian revenues. A proportion of these amounts would presumably be available for expenditure on the Indian military college to the extent to which the product of such a college replaces the product of Sandhurst and Woolwich in the Army in India.

## CHAPTER IV.

## CONCLUDING REMARKS.

50. *Summary.*—A complete summary of our recommendations will be found in Appendix 1 to this report.

51. *Some members of the Committee—their special knowledge.*—Of the Members of our Committee, Nawab Sir Sahibzada Abdul Qaiyum has not only had intimate associations with the Indian Army throughout the whole of his life, but moreover has a nephew and ward, trained at Sandhurst, now holding the King's Commission in the Indian Army. Subedar-Major and Honorary Captain Hira Singh, himself a Viceroy's Commissioned officer of long service, has two sons in the Indian Army, holding the King's Commission, both of whom were trained at Sandhurst, while one received part of his early education at Dehra Dun College. Captain Hira Singh has a third son, now being educated at Dehra Dun, who is also destined for a military career. Risaldar-Major and Honorary Captain Haji Gul Mawaz Khan, another Viceroy's Commissioned officer of long service, also has a son in the Indian Army, holding the King's Commission, who received his military training at Sandhurst. Major Thakur Zorawar Singh and Major Bala Sahib Daffé were among the first Indians to be granted, in 1917, the full King's Commission, and they had previously held commissions in the Native Indian Land Forces, having received their training in the old Imperial Cadet Corps (*vide* paragraphs 6 and 36 preceding). We mention these facts to show that the gentlemen in question have been in a position to contribute to the consideration of some of our most important problems personal knowledge and practical experience which have been of great and special value to us.

52. *Acknowledgments.*—We desire to place on record our appreciation of the great kindness and courtesy shown by the Governments of France, Canada and the United States in allowing the members of our Sub-Committee the privilege of visiting some of their educational institutions, and to acknowledge also the assistance afforded by those departments of His Majesty's Government who in a similar manner made it possible for the Sub-Committee to obtain the information they required regarding the systems of education, military and civil, in vogue in England. We are equally indebted to the authorities of the institutions visited by the Sub-Committee, who by their ready help and generous hospitality enabled the members to carry out their appointed task with considerable enjoyment to themselves and great benefit to the work of the Committee. But perhaps our greatest obligation is to the members of the Sub-Committee, who, sacrificing their private interests over a period of several months, brought back to us information which has very materially assisted us in arriving at many of the conclusions contained in this report.

Finally, we desire to acknowledge the valuable assistance rendered to us by Major Lumby, who, as Secretary both to the main Committee and also to the Sub-Committee, whom he accompanied throughout their tour, has performed to our entire satisfaction duties of a very onerous character and has earned our most cordial thanks. He has served us faithfully and with conspicuous efficiency.

A. SKEEN,

*Lieut.-General.*

M. A. JINNAH.

JOGENDRA SINGH.

PHIROZE SETHNA.

M. RAMACHANDRA RAO.

ABDUL QAIYUM.

HIRA SINGH,

*Captain.*

ZIAUDDIN AHMAD.

J. N. BANERJEE,

*Captain.*

ZORAWAR SINGH, M.C.,

*Major.*

HAJI GUL MAWAZ KHAN,

*Captain.*

BALA SAHIB DAFLE,

*Major.*

E. BURDON.

### NOTE.

The members of the Committee feel that they have been so exceptionally fortunate in their Chairman that they cannot refrain from expressing their cordial and respectful appreciation of his services to them. Sir Andrew Skeen's ripe experience, his breadth of mind and sympathetic outlook, and the patience, courtesy and skill with which he has directed their proceedings have made their task a pleasant one and have very greatly facilitated its accomplishment.

They feel bound also to refer to the services rendered to them by Mr. Burdon, who, apart from the Chairman, was the only official member of the Committee. He brought to their deliberations an unrivalled knowledge of the past history of the problems with which they were confronted : and the shrewd appreciation, which this knowledge gave him, of the difficulties connected with their solution was an invaluable aid to them both throughout the course of their enquiry and during the preparation of their report.

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## APPENDIX I.

*Summary of recommendations.*

## MAIN RECOMMENDATIONS.

(i) The scope of the employment of Indians in the higher ranks of the Army in India should be greatly extended, and facilities should be provided in India to train them for King's Commissioned rank. A substantial and progressive scheme of Indianisation should be adopted, and, subject to the present standard of efficiency being maintained, should be faithfully carried out. (Paragraph 21).

Such a scheme should provide for the following measures :—

- (a) In 1928, the number of vacancies, at present ten, allotted to Indians at Sandhurst should be doubled, and thereafter should be increased progressively until a military college on the lines of Sandhurst is established in India. (Paragraph 21).
- (b) Indians should be made eligible to be employed as King's Commissioned officers in the Artillery, Engineer, Signal, Tank and Air arms of the Army in India. For this purpose they should be admitted to the Royal Military Academy, Woolwich, and the Royal Air Force College, Cranwell, provided they qualify by the same tests as British boys, until the occasion arises to create corresponding facilities for their training in India. From 1928 eight vacancies should be allotted to Indians at Woolwich and two at Cranwell, and these numbers should be increased progressively, in due proportion. (Paragraph 22).
- (c) In 1933, i.e., as soon as the improvements recommended in matters of subsidiary importance, connected with the securing of suitable candidates for the Army, have had time to take effect, a military college, with an establishment at the start of 100 cadets doing a three years' course, should be created in India on the model of Sandhurst. The establishment of the college should be increased progressively. (Paragraph 21).

Successful cadets from the college should be granted the King's Commission in His Majesty's Land Forces. (Paragraph 36).

- (d) In order to secure the maintenance of the Imperial connection in military matters, 20 vacancies should continue to be reserved for Indians at Sandhurst after the opening of the Indian military college. (Paragraph 21).

Under the scheme proposed half the total cadre of officers in the Indian Army would be Indians in 1952. (Paragraph 21 and Appendix II).

(ii) Steps should be taken to maintain the proportion of British recruitment required. (Paragraph 21).

(iii) Indian King's Commissioned officers trained at the Indian military college should complete their initial training in England. (Paragraphs 46 and 47).

(iv) Within reason questions of finance should not be allowed to stand in the way of giving effect to these proposals. (Paragraph 49).

#### SUBSIDIARY RECOMMENDATIONS.

##### *Improvements in the system of education.*

(v) The Prince of Wales' Royal Indian Military College, Dehra Dun, should be gradually expanded up to the limit most suitable for an educational institution of this character. The control of the college should remain in the hands of the military authorities, and its main object should continue to be the production of boys for the Army and Navy. Its curriculum and standard of teaching should, however, be carefully adjusted with a view to securing also that the course of education at it confers a qualification recognised by the University authorities.

When the expansion of the existing college is complete, a second college on the same lines should, if circumstances demand it, be opened in some other part of India. (Paragraph 24).

(vi) The Government of India should impress upon educational authorities the paramount national importance of reforming the system of education in India with a view to developing in the pupils of the ordinary schools and colleges those characteristics, so essential in an Army officer, to which little or no attention is at present paid by them, and should appeal to them to reorganise the institutions under their control to this end. (Paragraph 24).

##### *Age limit.*

(vii) The upper age limit for entrance to the Army should for the present remain unchanged. The ultimate aim should be to reduce it so that Indian boys shall enter the Army on an equality as regards age with British boys. (Paragraph 25).

##### *Publicity.*

(viii) The existing methods of publicity should be continued, but should be supplemented by enlisting the aid of the University authorities and Provincial information bureaux. (Paragraph 26).

##### *Methods of selection and examination.*

(ix) Entrance to the Indian military college in the case of candidates from the Dehra Dun College and the ordinary schools and colleges should be by open competitive examination. (Paragraph 27).

(x) The basis of selection should be wide, and the method of applying to sit for the entrance examination as simple as possible. No preference should be given to any particular class or community. (Paragraph 27).

(xi) The Army entrance examination should be conducted by a single central authority at the headquarters of the Government of India, to which any boy, provided he possesses certain prescribed qualifications, should be eligible to apply direct for permission to attend it. (Paragraph 27).

This authority alone should have the power after due enquiry as to his qualifications and antecedents to refuse a candidate permission to sit at the examination. All candidates whose applications are approved by this authority and who satisfy a military medical board as to their physical fitness, should be allowed to attend the central entrance examination. (Paragraph 27).

(xii) Advisory boards should be constituted in convenient centres for the purpose of advising candidates as to their chances of success in the entrance examination. Such boards should have no power to reject a candidate, and a candidate should not be bound to abide by their verdict. (Paragraph 27).

(xiii) Candidates should be required to pay all expenses incurred by them in proceeding either to attend the medical board or to sit at the entrance examination. (Paragraph 27).

(xiv) To be eligible to sit for the competitive entrance examination a boy educated at one of the ordinary schools should be required to be between the ages of  $16\frac{1}{2}$  and  $18\frac{1}{2}$  and to have passed the Matriculation or equivalent standard. (Paragraph 41).

(xv) Boys from the Dehra Dun College should enter the military college at approximately the same age as boys from the ordinary schools. As it is desirable that boys should spend at least six years at the Dehra Dun College in order to get the maximum benefit from it, the age limits for admission to the college should be reduced from the present  $11\frac{1}{2}$  to 12 years to 10 to  $11\frac{1}{2}$  years. (Paragraph 41).

(xvi) Indian boys educated in England who wish to receive their military training at the Indian military college should be required to qualify by the same tests as are applied to boys educated in India. (Paragraph 43).

(xvii) British boys who wish to enter the Indian Army should, if they are willing, be permitted to receive their military training at the Indian military college on the same conditions as Indian boys. (Paragraph 43).

(xviii) The entrance examination should consist of a written examination and an interview test. The final nomination should be made by H. E. the Viceroy on the combined results of these two tests. The majority should be chosen from among those who stand highest

in the order of merit, but H. E. the Commander-in-Chief should have the power to recommend the nomination of a certain percentage of candidates from among those who qualify, but do not stand sufficiently high to obtain nomination in the ordinary course. (Paragraph 27).

(xix) Indian boys, whether educated in England or in India, who desire to enter Sandhurst should be required to qualify for admission by the same test as British boys. Arrangements should be made to allow them to compete for entrance either in England or in India. Urdu should be included as an optional subject in the entrance examination. (Paragraph 43).

Boys studying at the Dehra Dun College who wish to enter Sandhurst should be permitted to remain at the college for an extra year in order to complete their preparation for the entrance examination. (Paragraph 41).

#### *Indian military college.*

(xx) No pains should be spared to place the machinery of the Indian military college on the highest plane of efficiency which India can attain. The instructors should be mainly British officers and should be picked men. If necessary, specially attractive terms of remuneration should be offered in order to secure teachers of the highest capacity and reputation. (Paragraph 36).

(xxi) The course at the Indian military college should, in addition to military subjects, include a period of academic study as well. It should last for three years, of which the first should be mainly devoted to academic study and the last two mainly to military training. The academic standard attainable at the end of the course should be so framed as to secure specific recognition from the educational authorities. The scope of the military training should be the same as that of the present Sandhurst course, but it may be desirable later to convert the college into a combined institution providing also the facilities of Woolwich. (Paragraphs 38 and 47).

(xxii) The establishment of the college at the start should be 100 cadets. It should be inaugurated with an intake of 33 cadets a year for the first three years, so that it may reach its full initial establishment in the year in which the first batch of entrants commence the last year of their training. In the fourth year of its existence, and subsequently at intervals of three years, the annual intake should be increased by 12. (Paragraphs 21 and 44 ; Appendix II).

#### *Cost of education and military training.*

(xxiii) The expenses of maintaining the Indian military college should be reduced to the lowest level compatible with efficiency, and, in order to bring the college within the reach of Indian parents



of the classes which will provide the majority of cadets, the fees charged should be fixed at an amount which can be paid without hardship by parents of these classes. (Paragraph 31).

(xxiv) Scholarships should be provided by the Government of India for 20 per cent. of the boys who pass into the college annually, both to encourage talent and to assist the sons of soldiers who would otherwise be unable for financial reasons to enter the college.

Some of these scholarships should be fixed at an amount which will cover part of the expenditure on the boy's education at Dehra Dun, if he has been educated there. Apart from this there should be no modification of the existing official arrangements regulating the incidence of the cost of the education at the Dehra Dun College.

In addition the endowment of scholarships through private generosity for boys of particular Provinces, classes, communities and Indian States at Dehra Dun and the Indian military college would be welcomed. (Paragraph 31).

(xxv) Boys who elect to receive their education at Sandhurst after the military college has been established in India should receive no greater pecuniary assistance than that which is given at present to Indian boys proceeding to Sandhurst. (Paragraph 31).

#### *Guardianship of Sandhurst cadets.*

(xxvi) The arrangements for the guardianship of the Indian cadets at Sandhurst should be placed on a satisfactory footing. Parents who are in a position to do so should be encouraged to select their own guardians for their boys. For those boys whose parents are unable to secure the services of a personal guardian an official guardian should be appointed. He should be very carefully chosen, and his duties should be precisely defined. In view of the heavy responsibilities which will devolve upon him he should be granted some substantial remuneration. (Paragraph 34 and Appendix IV).

#### *Grant of King's Commissions to Viceroy's Commissioned officers.*

(xxvii) Viceroy's Commissioned officers who satisfy certain conditions should be admitted to the Indian military college in limited numbers for the purpose of qualifying for the King's Commission. Candidates should be selected by a board similar to that which interviews candidates for Sandhurst. Those admitted to the college should only be required to undergo the last two years, or the military portion, of the course. (Paragraph 28).

(xxviii) Special educational facilities should be afforded to the children of the classes from which Viceroy's Commissioned officers are drawn, so that the best of them may have a practical chance in future of rising through Viceroy's to King's Commissioned rank. (Paragraph 28).

### *Grant of University Commissions.*

(xxix) Suitable Indian students of British Universities should be granted direct commissions in the Army. To make this proposal effectual, the Officers' Training Corps at British Universities should again be thrown open to Indians, any expense incurred in such a step being borne, if necessary, by the Government of India. (Paragraph 29).

(xxx) The time is not ripe at present for the grant of direct commissions on similar lines to students of Indian Universities. (Paragraph 29).

### *Later Training.*

(xxxi) Indian cadets who are commissioned from the Indian military college should be attached to a cavalry or infantry unit in the United Kingdom for a period of one year. (Paragraph 46).

(xxxii) Indian cadets who qualify at Woolwich, and, later, those who qualify in India by the course corresponding to that of Woolwich, should complete their initial training in exactly the same way as the British cadet does at present, i.e., by attending courses at Chatham and Cambridge in the case of Engineer officers and at Larkhill in the case of Artillery officers. (Paragraph 47).

### *The "eight units scheme".*

(xxxiii) The "eight units scheme" should be abandoned, and Indian King's Commissioned officers should be eligible to be posted to any Indian unit of the Indian Army. (Paragraph 32).

### *Pay and allowances.*

(xxxiv) There should be no change in the present rates of pay and allowances, including marriage allowances. Incidentally, married students should not be allowed at the Dehra Dun College, or married cadets at Sandhurst or the Indian military college. (Paragraph 33).

### *Indian States.*

(xxv) A certain number of vacancies at the Indian military college over and above the number of vacancies available for candidates seeking commissions in the regular Indian Army should be reserved for Indian States which wish to avail themselves of the benefits of the training available at the college for the purpose of giving higher training to some of the officers of their State Forces. (Paragraph 48).

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## APPENDIX II.

*Scheme of Indianisation.*

The details of the suggested scheme of Indianisation of the Indian Army are shown in tabular form in the statement appended. The following notes are explanatory of the statement.

1. The normal strength of the cadre of officers of the Indian Army (Cavalry and Infantry units) has been taken as 3,200. The annual wastage in that cadre has, it is understood, never been actuarially calculated, and it has been assumed to be 160, the only figure of authority supplied to the Committee.

2. It is proposed that an increase of 10 vacancies at Sandhurst should be sanctioned immediately. An interval must be allowed in which to advertise the extra vacancies, etc. To permit of an increase in May, 1928 the additional cadets would have to be ready to pass the examination held in September, 1927, and would have to commence their special preparation for the examination at least six months before that. It is therefore postulated that there would be no increase of actual entrants until the September term of 1928, when 10 cadets instead of 5 should be admitted to Sandhurst, the examination for admission having been held in May, 1928.

3. In 1929 and in successive years, up to and including the year in which the proposed Indian military college is opened (*vide* note 4 following) it is proposed that there should be an increase of 4 each year, as a temporary measure, in the number of vacancies allotted to Indians at Sandhurst.

4. In 1933, a military college on the lines of Sandhurst should be opened in India. The capacity of the college should in the first instance be 100 cadets, and the course of training three years. A batch of 33 cadets should join the college in 1933 and in each of the two succeeding years.

5. After the opening of the Indian Military College, the number of vacancies allotted annually to Indians at Sandhurst can be reduced to the former figure of 20. Any vacancies at Sandhurst not actually taken up by Indians should be added to the establishment of the Indian Military College.

6. In 1936, the first cadets trained at the Indian Military College receive their commissions.

7. In 1936, the annual intake at the Indian Military College is increased by 12, this making a total of 45 Indian cadets sent for training, exclusive of the 20 Indian cadets sent to Sandhurst.

8. In 1939 and at intervals of 3 years thereafter, the annual intake at the Indian Military College is further increased, on each occasion by 12. In 1942, the intake rises to 69, giving, with the 20 Indian cadets sent for training at Sandhurst, a total of 89 Indian cadets to be commissioned.

9. In 1944, the senior Indian King's Commissioned officers now in the Army will be due to be considered for command of regiments. After this stage is passed and, it is assumed, passed successfully, the

number of commissions granted to Indians rises above 50 per cent. of the total annual recruitment to the Indian Army.

10. In 1952, more than 50 per cent. of the total officer cadre of the Indian Army consists of Indians.

11. The above figures are subject to a percentage correction on account of inevitable wastage and failure. This cannot be calculated precisely and for the present purpose it is not necessary to attempt to do so.

*Table showing suggested scheme of Indianisation.*

Year.	Numbers sent for Training.			Numbers Commissioned.			Total Commissioned.	Remarks.
	(a) Sandhurst. (1½ years).	(b) Indian Military College (3 years).	Total.	(a) Sandhurst.	(b) Indian Military College.	Total.		
Already Commissioned	..	..	75	..	..	75	75	
New at Sandhurst ..	18*	..	18	..	..	..	..	
1927 February ..	5 } 10	..	10	{ 7 } 9	..	9	84	
September ..	5 }			{ 2 }				
1928 February ..	5 } 15	..	15	{ 9 } 14	..	14	98	
September ..	10 }			{ 5 }				
1929 February ..	10 } 22	..	22	{ 5 } 10	..	10	108	
September ..	12 }			{ 5 }				
1930 February ..	12 } 26	..	26	{ 10 } 20	..	20	128	
September ..	14 }			{ 10 }				
1931 February ..	14 } 30	..	30	{ 12 } 24	..	24	152	
September ..	16 }			{ 12 }				
1932 February ..	16 } 34	..	34	{ 14 } 28	..	28	180	
September ..	18 }			{ 14 }				
1933 February ..	18 } 38	33	71	{ 16 } 32	..	32	212	Indian Military College opened.
September ..	20 }			{ 16 }				
1934 February ..	20 } 30	33	63	{ 18 } 36	..	36	248	
September ..	10 }			{ 18 }				
1935 February ..	10 } 20	33	53	{ 20 } 40	..	40	288	
September ..	10 }			{ 20 }				
1936 ..	20	45	65	20	33	53	341	First batch commissioned from Indian Military College.

\* Includes 3 Cadets who should have been commissioned by now in the ordinary course, but who were kept back as still requiring further training.

Year.	Numbers sent for Training.			Numbers Commissioned.			Total Commissioned.	Remarks.
	(a) Sandhurst. (1½ years).	(b) Indian Military College (3 years).	Total.	(a) Sandhurst.	(b) Indian Military College.	Total.		
1937 .. ..	20	45	65	20	33	53	394	
1938 .. ..	20	45	65	20	33	53	447	
1939 .. ..	20	57	77	20	45	65	512	
1940 .. ..	20	57	77	20	45	65	577	
1941 .. ..	20	57	77	20	45	65	642	
1942 .. ..	20	69	89	20	57	77	719	<i>Half numbers under training Indians.</i>
1943 .. ..	20	69	89	20	57	77	796	
1944 .. ..	20	69	89	20	57	77	873	
1945 .. ..	20	81	101	20	69	89	962	<i>Half numbers commissioned Indians.</i>
1946 .. ..	20	81	101	20	69	89	1,051	
1947 .. ..	20	81	101	20	69	89	1,140	
1948 .. ..	20	93	113	20	81	101	1,241	
1949 .. ..	20	93	113	20	81	101	1,342	
1950 .. ..	20	93	113	20	81	101	1,443	
1951 .. ..	20	105	125	20	93	113	1,556	
1952 .. ..	20	105	125	20	93	113	1,669	<i>Half total cadre.</i>
Total .. ..	..	..	2,002	..	..	1,669	..	

## APPENDIX III.

*Extract from a Lecture given at the R. M. C., Sandhurst. (Reprinted from the R. M. C. Magazine, Easter, 1925.)*

“ Finally, I promised a word about the Indianisation of the Indian Army, that is to say, the gradual substitution of Indian for British officers. There is a good deal of talk about this measure, and some people maintain that the Indian Army does not offer a career to the young Britisher to-day. They say that Britishers going into the Indian Army will have to serve under Indians, and that there is no security of tenure : that is to say, that at any time in his service a British officer may be called upon to clear out so as to make room for an Indian.

But in truth what does this measure amount to ? Out of a total of 132 Indian battalions and twenty-one Indian cavalry regiments the Government have selected six infantry battalions and two cavalry regiments to be Indianised. They have said to India, “ Now, prove to us that you can produce Indian officers, who can administer these units in peace and lead them in war. We will give you every assistance, but until you can prove your case we will not further extend Indianisation, as to do so might jeopardise India.”

But let us examine the arguments against going into the Indian Army. Firstly, what are the chances of a British officer entering the Indian Army to-day having to serve under Indian officers. In considering this question, remember that the average age on becoming a captain in the Indian Army is twenty-eight, and on becoming a major, thirty-seven. The figures that I give you are approximately accurate, and are taken from the Indian Army List of January 1925. In the Indian Army to-day we have seven Indian captains, of whom two are about to go. Of the remaining five, two belong to Indianised units to which British subalterns are not being posted ; so, of a total of 1,583 captains in the Indian Army, there are only three Indians under whom a Britisher might be called upon to serve, and two of these, owing to their age, are not likely to be promoted beyond the rank of major. So much for the captains.

Now for the subalterns. We find fifty-three Indians amongst them out of a total of 480. Of these fifty-three, eleven belong to Indianised units, and out of the forty-two remaining, six are over forty, and twenty-two between the ages of thirty and forty. The majority of these will take their first pension and clear out, for age precludes the possibility of their rising very high. Fourteen are left, eight of whom will not become captains till they are thirty-two years of age or over. Probably these will find that age will prevent their going very far, and of the six remaining, four will be just on thirty when they get their captaincy, and only two will get their captaincy at the age of twenty-eight.

A study of the Army List leads me to the conclusion that twenty years hence only a very few Indian officers out of those now serving will be left scattered about among the 131 units of the Indian Army open to British officers to-day. Moreover, as the few Indians that remain go up in rank it appears only logical to post to Indianised units, so that the Indian may have the opportunity of proving that he can produce efficient all-Indian units.

As regards Indian second-lieutenants, they are being posted to Indianised units, and this will continue for some years yet. When these units have proved their worth their number may be increased, and the British officers in them replaced by Indian cadets from Sandhurst. These will, however, be junior to any British officer in their unit, and the British officers so replaced will be absorbed into other units.

And now to take argument No. 2, namely that if Indianisation of the Indian Army is extended, those who go into that army to-day will find themselves thrown out later. This idea appears to have sprung up largely as the result of the drastic cutting down of the British and Indian Armies after the War. At that time large numbers of British officers were rendered surplus to our requirements, both in the British and Indian Army, and, as it was financially impossible to keep an army large enough to employ them all, it became necessary to buy them out.

Indianisation is a different matter. It is a case of substituting one man for another, and, since officers in all ranks cannot be found ready-made, they must be educated up. Indianisation of the other services can proceed more rapidly, as Indians have been employed in them for years, and Indians to fill the higher offices already exist. But with the Army it is not so, and Indianisation must be a very gradual process, and expansion, if it is decided eventually to expand, can only take place by giving more commissions as second-lieutenants.

This fact to my mind precludes the possibility of a Britisher, entering the Indian Army to-day, finding himself thrown out later to make room for an Indian.

What I have said puts before you the point of view of the Britisher entering the Indian Army to-day, but, in considering it, do not let us lose sight of the task that is before the Indian cadets amongst you. It is they who have to prove, in the years to come, that they can produce units officered throughout by Indians, well trained and administered in peace and capable of rendering a good account of themselves in the test of war, and it is up to us to help them in every way we can."

---

## APPENDIX IV.

*Draft of suggested instructions prescribing the duties of the official guardian of Indian cadets at Sandhurst.*

(1) The official guardian should during term time occupy a residence near the Royal Military College at Camberley.

(2) He should keep in close personal touch with his wards. He should make it his business to learn their circumstances. He should, at all times, be available for them to visit and should help them in any of their difficulties. He should make it his aim, so far as it is possible for a stranger to do so, to take the part of the boy's parents.

(3) He should avoid as far as possible imposing on Indian cadets any restrictions which are not shared by British cadets.

(4) He should correspond with parents, keep them informed of the progress of cadets and advise them in regard to their work, their health, their happiness and other cognate matters.

(5) He should keep in personal touch with the Commandant and Company Commanders of the Royal Military College ; but he should be careful to abstain from identifying himself in any way with the internal machinery of the Royal Military College whether as regards discipline or education.

(6) He should correspond when necessary with the Military Secretary, India Office.

(7) Cadets should be invited to visit the residence of the official guardian at frequent intervals in order that they may acquire an insight into English home life.

(8) The official guardian should make suitable arrangements for the vacations of his wards and should ensure that the vacation is spent to the best advantage, *e.g.*, in visiting and meeting British lads of their own age.

(9) Parents should be given an estimate of the private expenses that would normally be incurred. Funds should be remitted to the official guardian who should disburse to the cadets as required, keep individual accounts, and submit periodical accounts to the parents.



**REPORT**  
**ON**  
**VOCATIONAL EDUCATION IN INDIA**  
(Delhi, the Punjab and the United Provinces)

**By A. ABBOTT, C.B.E.**

(formerly H. M. Chief Inspector of Technical Schools  
Board of Education, England.)

**WITH A SECTION ON**  
**GENERAL EDUCATION AND ADMINISTRATION**

**By S. H. WOOD, M.C.**

(Director of Intelligence, Board of Education, England.)



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BOARD OF EDUCATION,

WHITEHALL,

LONDON, S. W.

*10th June 1937.*

SIR,

We beg to submit to the Government of India the enclosed Report entitled " Vocational Education in India with a Section on General Education and Administration " which we have prepared as a result of the investigations which we made during our recent visit to India at the invitation of the Government.

We are, Sir,

Your obedient Servants,

A. ABBOTT.

S. H. WOOD.

The Secretary,  
Department of Education, Health and Lands,  
Government of India,  
Simla,  
INDIA.



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## INTRODUCTION.

On the 3rd August, 1936, the Government of India addressed a communication to the India Office requesting the Secretary of State to obtain the help of the Board of Education in selecting suitable persons from England to visit India in order to advise on certain problems of educational reorganisation, and particularly on problems of vocational education. The proposal was that a team of ten should be selected, that they should arrive in India not later than the end of October, and that by a division into five groups of two each, one with a knowledge of urban and one with a knowledge of rural educational problems, the whole of India should be covered by the end of March.

The Board of Education were not able, in the time available, to secure the services of so many people competent to advise on the questions at issue and willing to leave England at such short notice. The Board were however very anxious to co-operate with the India Office and the Government of India ; and, in due course, we were chosen by the Board, and invited by the Government of India, to visit India as soon as we could in order to study the situation and offer our advice. We ought here to say that though both of us have had experience of rural educational problems neither of us is an agricultural expert.

We arrived in India on November 20th. Circumstances over which we had no control prevented an earlier arrival. We proceeded at once to New Delhi and there we discussed with those authorized to advise us what our plan of campaign should be. Two alternatives presented themselves. We could make a rapid survey of the whole of India or we could concentrate on two, or three, provinces, as we should have done had we been two of the team of ten originally proposed. The date of our departure from India, which we discovered would have to be earlier than was originally intended owing to the " advance bookings " for the Coronation, had to be taken into account in deciding the best way of spending our time.

It appeared to us that if we were to visit the whole of British India so much time would necessarily be taken up in travelling, and in meeting high officials in each province that we should find little opportunity for visiting schools of all types and ascertaining the views and studying the practices of teachers and others actually engaged in the day to day work of education. It was also clear to us, from the beginning, that even an intimate acquaintance with educational provision would not be sufficient for our purpose. Vocational education is a road which leads the adolescent from the region of school to the region of productive employment ; and if this road is to be direct and safe both regions must be explored and charted. We should not, therefore, be able to make considered recommendations about vocational education unless we studied the structure, the volume and the conditions of industry and commerce ; and this would mean visiting small and large industrial undertakings, conferring with businessmen and ascertaining the amount and nature of the facilities for industrial training already in existence.

These considerations and the fact that both of us, though familiar with the numerous reports on education and on industrial conditions in India, were new

to the country, persuaded us that an intensive study of a limited area would be more profitable than a necessarily cursory survey of the greater part of British India. Accordingly we have limited our investigation, so far as visits are concerned, to three provinces : Delhi, the Punjab and the United Provinces. We have, however, been fortunate in making the acquaintance of, and discussing our problems with, administrators, teachers and others concerned with education from practically every province. In particular we derived much benefit from our attendance at the All-India Education Conference which met in Gwalior in December and to which we were courteously invited.

While we were in New Delhi, and before our investigation was in full swing, we were given the opportunity, which we very much appreciated, of attending a meeting of the Central Advisory Board of Education and of becoming personally acquainted with its members. We also, on separate occasions, had the privilege of meeting all the Directors of Public Instruction, or their deputies, of British India, as well as the Director of Industries in the Punjab and the Deputy Director of Industries in the United Provinces.

### *Terms of Reference.*

It will be convenient here to explain the nature of our task by recording our terms of reference as determined by the Central Advisory Board of Education. The terms of reference are as follows :—

“ To advise

- (1) Whether any vocational or practical training should be imparted in primary, secondary and higher secondary schools and, if so, what should be its nature and extent ?
- (2) In the light of the answer to (1), to advise whether the technical or vocational institutions already in existence can be improved and, if so, in what manner and, if new institutions for vocational or technical training be required, to suggest :—
  - (i) the type of institution or institutions required for the purpose ;
  - (ii) the stage at which diversion of the students from the ordinary secondary schools (lower or higher) to such institutions should be effected ; and
  - (iii) the means to be adopted for effecting such diversion, *i.e.*, vocational guidance.
- (3) The differentiation or special arrangements needed to meet the special requirements of rural areas, especially in view of the desirability of remedying the trend of the present educational system to draw many boys and girls from rural areas to towns where they receive a purely literary form of education and, by so doing, not only congest still further the high schools, but also become very largely lost to the service of the countryside ”.

We should explain that the use of the words ‘ primary ’, ‘ secondary ’ and ‘ higher secondary ’ schools rather than the words ‘ primary ’, ‘ middle ’ and ‘ high ’ schools arises from the fact that before our visit the Central Advisory Board of Education had constructed a revised framework of educational



organisation which provides a new terminology. Briefly the new framework expressed in terms of educational stages and classes is as follows :—

- (a) The Primary Stage—classes I—IV inclusive ;
- (b) The Lower Secondary Stage—classes V—VIII inclusive ;
- (c) The Higher Secondary Stage—classes IX, X and XI inclusive ;
- (d) The University Stage—a 3-year course for a Degree.

The present organisation is broadly as follows :—

- (a) The Primary Stage—classes I—IV inclusive ;
- (b) The Middle Stage—classes V—VIII inclusive ;
- (c) The High School Stage—classes IX and X ;
- (d) The Intermediate Stage—classes XI and XII ;
- (e) The University Stage—a 2-year course for a Degree.

In both schemes of organisation the total course, in so far as it leads to a University Degree, covers 14 years ; and in both the lowest age of admission to class I is presumed to be about five. We are aware that at present classes I to VIII are in some provinces regarded as classes I to IX, and that there are other differences peculiar to each province. Moreover, the various provinces do not, we understand, adopt precisely the same attitude towards the detailed framework of the proposed new organization. But for the purpose of understanding our terms of reference the classifications and contrasts outlined above will serve.

In view of the importance of a sound general education on which to base vocational education we have regarded it as within our terms of reference to report briefly upon the primary, middle, and high schools and also upon the training of teachers and the administration and inspection of schools. The main part of our report, that is the part dealing with vocational education, is the work of one of us (Abbott), while the section on general education and administration has been written by the other (Wood). Although we are in general agreement with one another, and when writing in the first person have used the pronoun “ we ”, each of us is responsible for his own contribution alone.

We wish at once to say that, though we regard reform of the content of general education as being even more important than a reorganisation of the framework of the educational system, we whole-heartedly commend the general layout of the proposed reconstruction. That is to say we think (a) that the Universities should make themselves responsible for a three year course leading to a first degree, and (b) that the system of general education below the universities should be divided into three well defined stages. This would ultimately involve abandoning the present administratively troublesome, and educationally ineffective, system whereby intermediate colleges or classes are sometimes part of an institution which is in fact a school, sometimes part of a university college and sometimes indeed isolated institutions providing a two year course.

We wish to record the fact that we have seen some schools, both general and vocational, of all grades in each of the three provinces which would stand comparison with good schools to be found in England and elsewhere. Our

critical survey of education is not, however, intended to be an essay in comparison. Conditions in India differ so markedly from those in Europe that an attempt at a comparative assessment would not, we believe, serve any useful purpose. There are, however, certain fundamental principles of education which are the basis of good practice wherever it be found, and if in the following pages we draw upon our experience of schools in Europe, it will be in elucidation of such principles rather than with the intention of measuring the schools of one country against those of another.

It is true that we urge that some of the key people engaged in educational work in India should pay systematic visits abroad in order to study foreign practice. But this is because we know that the surest stimulus to better work that a teacher, inspector or administrator, no matter where he comes from, can experience, is to witness, and to make an attempt to understand, the practice of other craftsmen. It is true, too, that we recommend that the initial direction of a certain new type of school should be in the hands of someone specially engaged from England. But this is because we believe that there is at present a dearth in India and elsewhere of teachers with the technical qualifications and the experience necessary to create this particular type of institution.

One of the reasons for instituting this inquiry into the educational system of India, and particularly into the relationship between the content and method of education and the requirements of industry and commerce, is the fact that a large number of university graduates are not securing employment, or employment of a kind for which their education qualifies them. On this aspect of the problem we may remark that it would not affect unemployment, considered as a quantitative problem, to divert students from universities into other educational institutions regardless of whether the students from these other institutions were likely to be more successful in obtaining employment than are the B.A.'s. and B.Sc.'s. Such a policy would but alter the educational qualifications of the unemployed without decreasing their number. It is important to make this clear and to avoid encouraging the delusion that a quick solution of the problem of unemployment is to be found in a reconstruction of the educational system.

The immediate purpose of education in relation to industry is to secure to industry the services of better qualified men, an achievement which does not by itself and at once result in more employment. The long range relation of education to industry is another matter. An improvement in the content and method of education will make for steadily increasing efficiency in industry and will contribute to its expansion; it should also generate new ideas and result in pioneer activities in the sphere of business. But the development of industry on a scale which will offer profitable employment to any substantial number of those who are now idle also depends upon the natural resources of the country, climatic conditions and a number of other factors which education cannot influence, as well as upon action in the field of economics and politics which do not come within our terms of reference.

The present issue is whether industry and commerce can look to the educational system for a regular supply of young people qualified to play their part and to earn a reasonable livelihood in the various grades of work into

which business naturally divides itself. The more efficient the supply the greater the possibility of industrial expansion ; but to create a supply out of all proportion to the demand would not only result in a waste of money and effort, it would disappoint many of those who had been specially trained, and could, thus, not fail to add to the general unrest.

We must emphasise that our report is based on a study of three provinces only. It would be cumbersome for us constantly to repeat this, but it should be clearly understood that, so far as we are concerned, our criticisms and our recommendations relate to Delhi, the Punjab and the United Provinces. It is not for us to say whether they are of significance to the provinces which we have not visited, and with whose educational provision and local problems we are therefore unfamiliar.

Before proceeding further we wish to express our deep gratitude to all those who have helped us with our task. In particular we are indebted to Mr. J. E. Parkinson, Commissioner for Education with the Government of India whose advice and, if we may say so, friendship have been invaluable to us at every stage of our inquiry. We have also immensely appreciated the unfailing help given to us, sometimes at great inconvenience to themselves, by Mr. W. H. F. Armstrong, Director of Public Instruction in the Punjab, Mr. R. S. Weir, Director of Public Instruction in the United Provinces, Rai Bahadur Ram Lal, Director of Industries in the Punjab, Mr. H. B. Hudlikar, Deputy Director of Industries in the United Provinces, Mr. J. G. Cowie, Inspector of Industrial Schools in the Punjab and Mr. J. C. Chatterjee, Superintendent of Education in the Province of Delhi. There are many others we could name whose help has been invaluable to us, but space forbids any further detailed acknowledgment of our indebtedness.

*May 1937.*

A. ABBOTT.

S. H. WOOD.



## PART I.

## GENERAL EDUCATION AND ADMINISTRATION.

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## CHAPTER I.

## THE PRIMARY SCHOOL.

1. We begin with an examination of the education of infants, a field in which India appears to us to labour under a very grave handicap.

*Infant education and women teachers.*

2. In India there are millions of boys, as well as a number of girls, between the ages of 5 and 7 whose education is wholly entrusted to men. We said in our introduction to this Report that we were not concerned to make comparisons between the schools of one country and those of another. But as we come from a country which refuses to recognise the employment of male teachers in publicly provided or aided infant schools we should be shirking our responsibilities if we did not say that experience of Indian practice came to us as a shock.

3. It is common for teachers and others concerned with modern educational practice to hold the following views :

- (a) that the education of young children should provide not only for their formal instruction in such things as reading, writing and number, but also for their physical care, for training them in good habits and for widening their experience through interesting activities ;
- (b) that in general women have a wider sympathy with young children and a deeper understanding of their needs and interests than men have ; and
- (c) that, in consequence, women are better fitted than men to undertake the school education of children up to, say, 7 years of age, irrespective of whether the children are boys or girls.

4. We have hitherto regarded these as sound doctrines and nothing we have seen in India leads us to change our view. We are therefore of opinion that until a system of infant classes staffed by trained women is established in India education will remain unsound at its very foundations.

5. We are aware of the many, and some of them almost insuperable, difficulties which stand in the path of this reform, but to despair of overcoming them would mean to acquiesce in a state of affairs which no one who has the welfare of young children at heart ought to accept as permanent.

6. We have seen many modest experiments designed to make some immediate contribution to the problem, such for instance, as a school for the training of the wives of village schoolmasters, and another for the training of Hindu widows. Every effort of this kind, no matter how small or how experimental, should be encouraged. The provincial governments might indeed be more active and more imaginative in their efforts to secure a supply of trained women teachers for the infants in boys' schools. Even if the difficulties attendant on their employment in the villages are great, considerable progress might be made in urban areas where women teachers can live under the protection of their families.

### *The Education of Girls and Women.*

7. We make no attempt to survey either the general education of girls and women nor the possibilities of vocational education for them. Such a survey, particularly because of the system of "purdah", could be made only by women. But we have seen a number of girls' schools and have been impressed with the liveliness and spontaneity of some of them. In particular, having seen infant classes, which include a number of little boys, in girls' schools in the hands of trained women teachers we are fully persuaded that young Indian women, like women in other countries, have the competence, the sympathy and the understanding necessary for the education of young children.

8. In any case it is extremely important for India to concentrate on the education of girls and women. It is desirable in the interests of women themselves and because educated mothers may be expected to care about the education of their children. It is necessary because of the demand for women teachers, doctors and social workers. It is also of great significance because educated women are one of the most powerful factors in civilizing men; and it is sometimes the manners of men which make the employment of women in schools and elsewhere so hazardous an undertaking, particularly in rural areas.

9. We say no more about the education of women; but we trust that what we have said is clear evidence of our conviction that its further development demands urgent attention from governments and local authorities.

### *The Nature of Young Children.*

10. Indian children, like other children, have feelings and experience emotions. Like other children, too, they are by nature playful in spirit, intellectually curious and physically active. This is true even though disease, malnutrition or social or religious custom may reduce or mask the spontaneous expression of characteristics typical of the young. The education of infants should not take mere casual account of these phenomena of growth but be based upon them, and bring them under disciplines which will result in the children's enlightenment, health and happiness. It is vitally important that young children should not be required to sit still for long periods at a time. A young child needs rest it is true, but he must play, he must explore and he must be physically active if he is to derive a daily satisfaction out of his attendance at school. In short he needs experience more than instruction. It is no answer to reply, even if the statement be true, that the child has ample opportunity for play, exploration and physical activity out of school hours. That is to misconceive the nature of a child's growth and incidentally to undermine intelligent co-operation between home and school.

11. We are convinced that, with the notable exception of a few schools, children in the infant classes in India spend too much of their school day in immobile "study". That is to say that they spend too much time sitting down with books, pens and pencils. In one school, taken at random the proportion of time for children of Class I allocated between physically inactive work and physically active work (counting clay modelling as physically active) was as 4 to 1. We do not say that this could not be matched in schools in other countries,



but that does not alter the fact that it is thoroughly bad educational practice. Among other things it must hamper the physical development of children; and schools cannot afford, least of all in rural India, to lay themselves open to the charge by parents—a charge which in fact is frequently made—that they produce physical weaklings.

### *Concentration on Literacy a Mistake.*

12. It has been impressed on us from many quarters that the main purpose of primary education is to secure permanent literacy. We regard this as an unbalanced view of the purpose of education at any stage; and even if we accepted it we could not subscribe to the present method of attempting to secure literacy. Literacy, like happiness, is not achieved by pursuing it as a narrow objective; it is a bye-product of satisfying activities. Literacy does not consist in reading and writing but in the use of reading and writing, and, it may be added, of speaking and listening. A child will not master these simple skills nor form the habit of using them unless they are required for purposes which are significant to him rather than to his teacher. Conning books, learning by heart, and chanting in unison, have their legitimate place in the disciplines of learning but they do not by themselves constitute an education for young children.

13. It is no surprise to discover that this concentration at the infant stage on literacy as the goal of schooling finds its natural expression in the worship of literary facility at the higher stages of education. If the seed is sown in the infant school it is idle to complain of the fruit as it ripens in the university.

### *A Suitable Curriculum for Infants.*

14. It would require a woman experienced in good infant school practice to make detailed suggestions for the training of children so young as the majority of those in Classes I and II. We can only broadly outline some of the studies and activities which we have in mind. In the first place necessary domestic duties should be brought within the child's daily training in orderly and hygienic habits. There must of course be formal instruction, and even drill, in reading, writing and speaking; and in counting and reckoning in numbers. But such instruction and drill should be for short periods and should be interspersed with opportunities for the use of these skills in activities which satisfy the child's wider interests. We envisage such activities as the following: acting and singing, physical exercises, games and dancing; nature study and the care for flowers and, it may be, animals; drawing and making things. These activities minister to one or other of the characteristic needs of children and provide them with experience which gives them confidence in their growing powers. Literacy comes incidentally as a child finds that he uses his knowledge of simple number relations or his ability to speak, read or write in the process of doing day by day something which gives him satisfaction.

15. Within commonsense limits, the smaller the child the bigger the materials he needs for expressing himself to his satisfaction. For instance, the infant does not as a rule get so much pleasure out of a pointed pencil and fine paper as from thick chalks or powdered paint for use on large sheets or rough paper, on the floor or on wall blackboards. The same principle applies to stories

and games for young children which should be generous in conception. Movement, colour, contrasts and the fundamental emotions are the things which appeal to them and which give them experience.

16. It may be objected that activities of the kind described produce a mess and give the school an appearance of disorder. The answer is that cleaning up is a proper part of training children in orderly habits, and that a continuous passion for tidiness on the part of a teacher is not compatible with good infant school practice.

### *Wastage, Stagnation and Boredom.*

17. "Wastage", so fully revealed by statistics, is no doubt partly due to parents withdrawing their children from school because they want them for work in the fields or at home. "Stagnation", of which we also hear a great deal, is of course partly due to the dullness of some of the children. But, in our view, both are to a considerable extent a result of the fact that so many of the children are frankly bored by the activities, or rather the inactivity, offered to them in the schools.

### *The School as a Crèche.*

18. We hear complaints that the infant school is frequently treated as a crèche. Mothers send their children to school in order to get them out of the way with some assurance that they will be looked after. They withdraw them as soon as they find a domestic or economic use for them. This is of course disappointing to teachers and exasperating to those who see public money expended on children whose attendance at school is negligible from the point of view of achieving literacy. But is not this really the schools' great opportunity? Good infant schools *are* places where, among other things, children are looked after, where they are given opportunities to be active without getting into mischief. Mothers are right in seeing the school in this light; and it is the school's business to build on it and do more for the children than mothers reckon on. But this *more* must not, as we have already said, take the form of inactivity such as can only make the children listless, restless or troublesome when they get home. When a normal child hails his release from school at the end of the day either with shouts and horse play or with a listless apathy it is fairly certain that he has been ill occupied during school hours. If an appreciation of, rather than a prejudice against, education is to find its way into the homes of rural India, the infant schools must be sensible, happy institutions which patently do something for the children which the home does not do but yet which the parents appreciate when it is done.

19. We have seen schools in India in which the activities of the children *are* based on such considerations as we have enunciated, and they are happy places. But in general the primary schools are not alive and are altogether too solemn. Little children and continuous solemnity go ill together.

20. It is easy to prescribe a sensible scheme of training on paper, but difficult day by day to minister to the needs of children in the flesh—some tired, some dull, some undernourished, and some recalcitrant. It would ill become us to minimize the difficulties of the task. We can but point to the need for

women teachers, and apart from this, to the importance of a system of training for infant teachers which is based on the real needs of young children.

21. We need not pursue in detail this analysis of the school day in the primary schools. The work of children in classes III and IV should be adapted to the increasing capacities and interests of the children, but it should be based on the fact that children of eight, nine and ten years of age are growing rapidly in body, mind and spirit, and that it is the function of the school at this stage to minister to that growth by enriching experience through activities as well as by book learning.

## CHAPTER II.

### THE MIDDLE SCHOOL.

22. By the time children reach the middle school, or as it would be called under the new organization, the Lower Secondary School, they should possess, among other things, a knowledge of their own language, written and spoken, which will enable them to use it for the expression of their own ideas and for their further instruction. That is what literacy means, and we need not labour the point that that is what we believe would more often be achieved if, during the first four years of school life, there were less concentration on language for its own sake and more on its acquisition for the satisfaction of the child's own interests.

#### *The Rural Middle School.*

23. We devote ourselves, in this chapter, more particularly to the rural middle school because we regard it as potentially the most significant educational institution in a country in which about 90 per cent. of the population live in rural areas. There is little hope of permanently improving the conditions of village life and of making the rural population responsive to fruitful ideas unless the younger generation is educated beyond the primary stage up to an age when boys and girls realize that they are becoming social and economic assets to the community.

24. It is not the duty of the rural teacher to plan his work with the intention of anchoring every child to the soil. A pamphlet\* recently issued by the Board of Education says "the view that education is concerned with determining as distinct from revealing, what and where a child's future is to be is a dangerous one, and is likely to lead to restriction of variety of educational provision, and thus to set limits to the free development of the individual child's aptitude and interests". But the same document says, "neither cultural nor utilitarian needs can be met by an education which does not freely derive its content and its inspiration from the environment of the pupils". Some of the best schools we have seen in India are those which, eschewing the teaching of English, base their instruction and their activities on the environment of the children and on the natural and social phenomena with which they are familiar. Ideally, the village school as an instrument of education starts with an advantage over the urban school. Among other things, the problem, so acute in many

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\* Education and the Countryside. Published by H. M. Stationery Office.  
Price 1/6d.

town schools, of providing suitable activities for the child who has outgrown the simple processes appropriate to the infant stage but is not yet old enough to be entrusted with sharp and delicate tools or expensive material, is much more easily solved.

25. There is scarcely an activity (we prefer at this stage of education to continue the use of the word "activity" rather than the word "subject") of the curriculum for children between say 9 and 14 which is not enriched by letting it arise out of rural life. To be more precise, a school in a rural area, with a garden or small farm attached, has very much greater opportunities for providing stimulating work and instruction in simple mathematics, nature study, science, geography and handwork than has an urban school. Its situation, moreover, unless it be starved of books and equipment, constitutes no bar to its also encouraging studies which do not arise out of environment; and of course it is the business of the school to widen horizons and to encourage an interest in things remote and unfamiliar.

26. We do not, however, envisage a school of this type as a vocational school for agriculture. It is true that most of the children despite the lure of urban life will, when they grow up, remain in the countryside; but we are convinced that agriculture does not lend itself to narrow vocational treatment in middle schools. Agriculture is a way of life and not merely an occupation. It is unreasonable to ask the rural school to attempt to provide technical instruction in agricultural processes. These involve an appreciation of chemistry, physics and biology which is beyond boys of 14 years of age. The business of the middle school is to make the familiar instructive and to inculcate in the boys such an attitude towards knowledge and their environment that they may, as they get older, be willing to face new ideas and changing circumstances with intelligence and courage.

27. We should not express so firm a conviction about the potentialities of the rural school if we had not seen some, particularly in the Punjab, which are promising enough to justify it. If, as we are told, middle vernacular rural schools are dying out to give place to anglo-vernacular schools it is a sign of something very wrong with educational policy. For we have been told on several occasions—and our limited experience of the schools confirms the statement—that, in general, the village boys whose school days have not been hampered by the grind of learning English are more alive at the end of the middle stage, that is to say they are better educated, than their fellows of the same age in the anglo-vernacular schools.

### *Education and "Rural Uplift".*

28. It would obviously be an advantage to the community if rural schools generally became what a few of them now are: centres of "rural uplift" (to use a phrase which we find is common in India), that is agencies for the propaganda of health, good habits, and an enlightened outlook on rural economy. But an indiscriminating mass policy designed to secure this would defeat its own end. It would inevitably burden a number of schoolmasters with responsibilities beyond their powers. The schools would deteriorate and "rural uplift" would be a fraud.

29. Many a village schoolmaster is ill-equipped and without professional or social status ; and he may be subjected to external influences which make dispassionate yet zealous work for his school and the village difficult to perform. If therefore, unaided, he assumes responsibility for activities outside his more narrow duties as a schoolmaster, his care and education of the children may suffer and the school may become a somewhat woolly centre of "village uplift" without any solid work on which to base its external activities. This brings "village uplift" into disrepute and is unfair to the children whose health and education should be the first concern of the school.

30. Two conditions must be fulfilled if the school is to perform this dual function of educating the young and acting as a centre of "sweetness and light" for the community as a whole. The teacher's status in the village must be improved ; and this means better training, a reasonable and sure salary, and some guarantee, subject to good work performed, of security of tenure. The other condition is that there must be effective co-operation between the education service and the other services (health, co-operative movements, and so on) which concentrate on improving village life. The schools must not have tasks for the enlightenment of the adult community forced upon them and then be left alone to perform them. Unless the other services can provide some one of purpose who is in a position to give continuous aid to the school in the discharge of its wider activities, it were better that the school limited itself to its more modest, but always exacting, duty of educating children. To make good the wider activities of the schools demands a co-operation between services, from the top to the bottom, which does not yet exist.

#### *Co-operation between Education and other Services.*

31. We cannot work out in detail the co-operation required because we are not familiar with the central and local organizations of those other services which have the welfare of the rural community at heart. It is obvious, however, that the efforts of those other agencies are bound to be wasteful unless their seed is sown on fruitful ground, and the only fruitful ground is a physically responsive and educated community. In other words the education service, and the health service with which it ought always to be associated, should be recognized, and openly recognised, as the basic social services. The health service does not come within our province but we cannot refrain from saying that one of the crying needs of India is an effective school medical service.

#### *The Vernacular and English.*

32. The vernacular will of course be the medium of instruction throughout the lower secondary school stage. We are not competent to discuss the methods of teaching, or the literature of, the vernacular languages ; nor are we qualified to offer any advice on questions, which we know are exercising thoughtful people, about the relation of the various vernaculars and the possibility of using a basic script for some of them. We can only urge that the narrow study of language should not assume, at the primary and middle stages, such proportions as to deaden the school life of active young boys.

33. We deal with the general question of the study of English later on and we should not mention it here were it not for the fact that many parents demand it thus early because of the social and economic value of a knowledge

of the language which is current in the higher ranges of government service and business. The schools must serve public needs, and the study of English, at least as an optional subject, may have to be included in the curriculum of some of the lower secondary schools where there is a public demand for it. We must however protest against an excess of language teaching at this early stage. An examination of the time tables for boys between say 10 and 14, who are learning English, in the provinces which we visited, reveals the fact that in many schools more than half the total number of teaching periods of the week are devoted to linguistic studies. In our view no social or economic consideration can justify such a misuse of educational opportunity.

### *General.*

34. We said when dealing with infants that education should be for them a matter of gaining experience, and that it was colour, movement, contrasts and the emotions which appealed to them. If we were to define the corresponding interests of boys between say 10 and 14 we should say that they are interested in experiment or, as it has been well put, in "how things work". A small child is delighted that an engine moves: an older boy wants to take the engine to pieces to put it together again and be able to say "I know how it works". And in the realm of natural phenomena a wealth of material is at hand for observation and simple experiment. Boys ought to understand, and they delight in understanding, how nature works. Sun, moon and stars, rain, hail and snow, clouds and winds, rivers and ponds, flowers, birds and other living creatures. How do they work? Many of the basic truths about these things are not beyond the discovery and understanding of boys, and it should not be regarded as beyond the capacity of teachers to lead pupils in observations and investigations sufficient to satisfy their interests. Much of the equipment required for this kind of activity is comparatively slight and some of it can be made by the boys themselves.

35. This brief survey of the middle school has dealt with principles rather than with the details of the curriculum. If it has not suggested the range of knowledge of the usual school subjects which is generally expected of boys at this stage, there are good reasons for the omission. We regard the acquisition of simple skills, including of course, reading, writing, speaking and listening, and the power to use them as instruments for obtaining further knowledge and experience as more important, at this stage, than knowledge itself. A boy's ability to understand what other people say and write and his power to express himself are more significant than his capacity to absorb information. Finally we have no fear that, even if we have neglected to indicate its range, there will be any dearth of class room instruction in subjects such as history, geography, science and mathematics. Our object has been not to decry instruction but to plead for the inclusion of activity as part of the educational process, in the conviction that for boys of this age "doing" is the beginning of "learning".

## CHAPTER III.

### THE HIGH SCHOOL.

36. It is a commonplace to say that the High Schools of India are examination-ridden and that teachers and pupils alike are too dependent on text books.

The Higher Secondary Schools will have to improve on the spirit and the methods of the existing High Schools if educational reconstruction is to mean anything more than a mere change of names. An educational institution intended to launch boys of, say, 17 years of age on the world at large must be designed to be more than a mere ante-room to the University.

37. The Higher Secondary Schools should not only instruct boys but also train them how to study, in the hope that they may remain mentally alert and continue the pursuit of intellectual interests after they leave school. It should give them experience of managing their own affairs corporately and so develop in them a sense of social responsibility. It should also offer each boy the opportunity of acquiring, through work of a definitely individual character, a reasonable independence of his fellows. These things are not achieved merely through classroom instruction, work in science laboratories and participation in games. The school should have a well-stocked library and rooms for creative activities, such as manual work and art. The boys should be encouraged to play a predominant part in organising their own societies and in planning activities outside the normal work of the classroom and the laboratory. A good school will also cultivate a close relationship with parents through parents' associations or in other ways. Parents have a right to be interested in institutions which purport to educate their children. We have seen a few High Schools which strive after these things, but our impression of them as a whole justifies the condemnation with which we opened this chapter.

### *Conditions of Recognition of Higher Secondary Schools.*

38. In our view there are more high schools and intermediate colleges purporting to give, and aided for the purpose of giving, an education suitable for boys of 15, 16, 17 and 18 years of age, than do in fact give it. Some of them because of inadequacy of space, buildings and equipment, and some because of their lack of teaching power cannot perform the task they are supposed to perform. Moreover, we are of opinion that if the universities were austere administered many of those who now secure admission to degree courses would fail to do so. The fact is that the absence of prospects of suitable employment for many of those who complete the present high school course leads parents, in despair, to look to the university for the further education of boys whose abilities and talents do not qualify them to profit by instruction of the kind which universities ought to provide. The universities on their side, partly owing to public pressure and partly because of the advantages to be derived from a substantial income from fees, fail to maintain strict university standards.

39. We are of opinion that each provincial government should make itself responsible for the effectiveness of the provision of higher secondary schools in its province. By this we do not mean that only the government should provide such schools ; but we do mean that by their provision they should set a standard, and that by comprehensive and regular inspection they should insist on that standard being consistently maintained by others.

40. Any school seeking recognition and aid as a Higher Secondary School should satisfy government on at least the four following points :

- (a) that having regard to the approved provision already in existence the school is necessary to meet the needs of the area (or in special cases, it may be, the needs of the religious community) which it is intended to serve,
- (b) that its buildings, equipment and playing fields are adequate,
- (c) that its teaching staff taken as a whole is, from the point of view of numbers, attainments, and experience, sufficient to shoulder the responsibilities of educating boys from 15 to 18 years of age, and
- (d) that the financial position of the school is such that it can be counted upon to be a permanent contribution to the provision of the area, and, with government aid, to pay its teachers on a salary scale approved by government.

41. We realise that certain anomalies requiring patient adjustment will arise. Tidy administration is not always good administration ; good administrative practice puts the actual needs of the situation before cut and dried regulations. There is, however, no doubt that compliance with these conditions would result in some of the existing high schools changing their status ; and of course the intermediate colleges as such would in any case disappear under the proposed reorganization. This may cause some heartburning to those who now provide high schools and intermediate colleges. But if the educational welfare of the people be accepted as the standard of concern, and if the importance of the lower secondary school be fully appreciated, is it too much to hope that each voluntary body will be willing, with grace, to make its contribution, to the whole system, realizing that it has a significant part to play even though it be not the part it would have chosen to play ?

42. It is not for us to advise on the future of individual schools. Decisions on such issues (and we admit they will in some cases be very difficult to take) can be made only by the central authority for education in each province.

#### *English as a Medium of Instruction.*

43. Sooner or later in the course of the higher education of Indian boys the English language becomes not only a subject of study but the medium through which instruction is given in other subjects. This is indeed another great handicap from which the system of education in India suffers—the use, at some stage, of a language not native to the people as a medium for their education. At present English is used as such a medium in the high schools—that is for many boys of say 15 or 16 years of age ; though, fortunately, universities are increasingly allowing candidates at the matriculation examination the option of answering questions in the vernacular.

44. It is not possible accurately to assess the mental dislocation and the inhibitions which boys of say 16 years of age suffer from being required to give and receive information, to formulate ideas, to record their experiences and to express their sense of values in a language other than that which they use and have always been in the habit of using in domestic and social life.



Our experience of the high schools, limited as it is, persuades us that this use of English as the medium of instruction lies at the root of the ineffectiveness of many of them. As a whole the boys in the high schools are responsive and educable but they are hampered at every turn by having to handle an instrument which comes between them and spontaneity. Among other disadvantages the use of a foreign language as a medium of instruction for school boys both fetters the discretion of those who prescribe syllabuses and set and correct examination papers and forces undue reliance on text books by teachers and pupils alike, even to the point of encouraging the latter to memorize whole passages from them.

45. We would therefore urge that so far as possible the vernacular should be the medium of instruction throughout the higher secondary schools, leaving English to take its extremely important place as a compulsory first language. We know that this will present many difficulties and that no wholesale and immediate departure from present practice is possible. The number of vernaculars presents one difficulty and the comparative absence of text books and reference books in them is another. But these and other obstacles to a change would not be insuperable if once the principle were genuinely accepted—particularly as there appears to be general agreement that the technical terms in use in English scientific text books could be retained.

#### *The Teaching of English.*

46. It would be difficult to overemphasize the importance to the educated Indian of a good knowledge of English. It is absolutely necessary for those who will move in the world of business, and government. It is moreover the only common language to be found in India, however limited may be its distribution having regard to the millions who are illiterate and the many others whose language familiarity is inevitably confined to their own local vernacular. Further, English is, to an increasing extent, being spoken and understood by educated people all over the world. It is therefore pre-eminently the language which opens up prospects of employment at home and abroad and offers the means of cultural communication with other parts of the world. There is thus every justification for English being treated as a compulsory language in the Higher Secondary School.

47. The prime necessity however for pupils at this stage is for them to become familiar with English as it is written and spoken in everyday life and in the ordinary English speaking home. This is the kind of English they need ; and unless a boy's knowledge is of this character the language cannot possibly justify itself to him or his teachers as a medium of instruction in other subjects at the university stage. Moreover along no other road can anyone travel to an appreciation of the great works of English prose and poetry.

48. We cannot therefore too strongly urge that the teaching of English should be simplified and, if we may so describe it, made more domestic. The repetition and critical study of difficult English prose and subtle English poetry—works which would tax the appreciation of school boys in England—should not form so systematic a part of the instruction of boys in the higher secondary schools as it does at present in the high schools. Teachers should bear in mind that the average boy of 15 or 16 years of age likes, and learns more from, a straightforward story or a book which describes interesting

people or records interesting events than from essays on abstract subjects or the finer flights of poetry.

49. Incidentally we may mention another though not so important an aspect of the problem. The teaching of English in Indian schools is in the hands of teachers, the great majority of whom have naturally had no opportunity of visiting England or any country in which English is the native language ; and they themselves may have been taught by others who also lacked that experience. The result is that there is current in many schools an English which is Indianised in pronunciation and intonation, and which therefore fails accurately to convey the genius of the language.

50. What is needed in the schools, if young men are to move with comparative ease in walks of life in which English is the medium of conversation, is slower and better articulated speech, training in the art of listening, and, if possible, more opportunities of hearing English spoken by English people. If those English men and women who have the time to spare would place themselves at the disposal of the schools for conversational purposes great benefit would result to the pupils. This proposal would require good will on the part of all concerned and careful organization, but it would not demand of those who offered their services any particular teaching ability.

51. We do not make these criticisms and suggestions without a very careful assessment of our short experience in India. We have been in more than one classroom in which it has taken us some time to realize that the teacher was using English as the medium of instruction. We have asked questions of boys who were being instructed through the medium of English and have been forced to the conclusion that some of them seem to assume from the beginning that they will not be able to understand a question asked in English by an Englishman. When they do understand and prepare to reply in English it is too often as though they were struggling with an instrument with whose intricate shape they were familiar but whose use for simple conversational purposes they had not sufficiently practised.

52. We are far from saying that there are not boys in the high schools whose maturity of mind and grasp of the language justify the pursuit of more advanced studies in English. We were, indeed, impressed by the few boys who stood out conspicuously among their fellows in this respect ; and, of course, staffing ought to be generous enough and time tables elastic enough to make special provision for them. But the normal boy ought to devote more of his time to work-a-day English and less to Shakespeare, Shelley and Macaulay. We would therefore suggest that even if set books in English are prescribed as an optional study for the examination to be held at the end of the higher secondary school course, the compulsory examination in English should mainly consist, apart from any oral test, of an essay and an exercise in précis writing. These would test the boys' power to express his own thoughts in English and his ability to understand and put into his own words what other people have said or written. These are the tests of familiarity with a language and, moreover, they lend themselves much less to cramming than do set books, which is no small advantage.

53. We are aware that the logical thing for some schools is to provide for the study of English at the very beginning of school life. This is done in those

schools, whose children for the most part, come from homes where English is normally spoken, and are, in any case, likely to be prepared for positions of responsibility in government or business. But no one knows which of the children in an ordinary primary or middle school will ultimately wish to qualify for admission to a university or to enter upon a career in which English is a necessity. And it is quite out of the question to burden the millions with an early study of English for the sake of catching the few to whom it may be an advantage.

## CHAPTER IV.

### MANUAL WORK, ART AND PHYSICAL EDUCATION.

54. We devote a separate chapter to some activities of the curriculum because what we have to say about them concerns primary, middle and high school education which we have already surveyed in chapters one, two and three respectively.

#### *Manual Work.*

55. It is often said that the Indian boy will not take off his coat and do a "job of work" with his hands. Manual work is undignified or worse. There are, sometimes, social reasons to account for this attitude, and it is of course one of the functions of education to overcome prejudices inimical to the welfare of society. But it seems probable that some of the disinclination to do manual work is due not to any traditional custom but to the fact that until recently boys have been starved, from the very beginning of their school days, of the satisfactions which come from manual activities. Fortunately manual work is now finding its place in the schools, though many boys are still deprived of its advantages. In some, but not many, schools it has developed in such a way that the workshop has become a place to which boys resort to carry out their own constructive ideas. Of course syllabuses are desirable in craft work as in other activities of the curriculum, and formal exercises are also necessary. But uniformity can be overdone. There are instructors in the schools who are capable of working out their own schemes and they ought to be encouraged to do so; and some of them might well give the more responsible and skilful boys much greater freedom than is, in fact, given at present.

56. Manual activities should find a place in the curriculum not because the pupils or some of them will earn a living by manual labour, but because satisfaction of the desire to make or create is necessary to balanced development. It is, indeed, often the key to a boy's serenity. Not every boy enjoys manual work or is competent at it, but the same is true of other 'subjects', such as mathematics and languages which are nevertheless taken for granted as part of the curriculum.

57. Manual or constructive work is educative while it is being planned and at the actual moment of execution. It is valuable for other reasons. It may lead pupils to acquire interests which will stand them in good stead in their leisure hours; and the importance of education as a means of enabling young men to sustain with dignity the intolerable leisure known as unemployment cannot be over-stated. Moreover, manual work gives boys a handiness,

invaluable to those who proceed from general to vocational schools—a consideration which is of great importance in the light of our investigation.

58. We must make it clear that we use the phrase manual work for convenience. In earlier days it was called "hand and eye" training. In any case we do not mean just carpentry or weaving or any other activity to which a definite name can be given. We include any task which makes a demand on a boy's skill, judgment, sense of observation and power of calculation, and combines all or some of these in a constructive effort to achieve an end which he himself wishes to achieve. The end may be making something he wishes to possess or to give to others; or it may be working out in concrete material some principle in mathematics, science or geography. It is not so much the thing made or done as the integration required in the making or doing which is of educational value. Many boys who have been labelled "dull and backward" have revealed unsuspected executive abilities when the emphasis of their training has been shifted from learning to doing.

59. We deal with Art separately but it is obvious that the relationship between a boy's manual activities and his appreciation of colour, form and design will be sincere only if the teachers of manual work and art co-operate with one another.

### *Art.*

60. We have already mentioned the desirability of giving infants opportunities of expressing themselves by drawing and painting, particularly in colour, and through the medium of plastic material. Such activities are a release to the children from formal instruction and minister to the development of their individuality. They involve the use of the hands; they bring observation, memory and imagination into play; and they make possible the beginning of a cultivation of taste. It is not necessary to have an artist to supervise the work of young children. What they need is sensible guidance and encouragement so as to give them confidence, but otherwise to be left reasonably alone to express themselves in their own way.

61. Very young children can produce attractive imaginative pictures and simple craft work of a kind which gives them great pleasure and satisfaction. We have seen convincing proof of this in those Primary Schools in which the teachers believe in the enterprise and sincerity of the children and give opportunities for their exercise. But we have also seen a great deal of work which amounted to little more than tracing or copying the drawings of others. Children may reasonably trace or copy a map if it is required by them for geographical purposes, but there is little value in young children tracing or copying some one else's drawing of a camel or a tree. Similarly there is some point in using a mould for making something which must be of mathematical proportions because it is to fit into some other structure. But it is a waste of opportunity to ask children to make an elephant from a mould when there is material available for each child to fashion his own elephant. Moreover, drawing an object from sight is seldom a useful exercise for very young children. If infants are to learn how to use and to enjoy controlling tools and material they must, to begin with, be allowed freely to draw or make from memory and from imagination.

62. Draughtsmanship and the desire to become proficient in design and crafts comes later. As they grow up children are not satisfied merely to express their own ideas without relation to any standards. They begin to appreciate the work of others and to care about the level of execution of their own work ; and their education should, therefore, take the form of a training in taste and appreciation as well as a discipline in the honest representation of their immature ideas. If, at the middle school stage, art is closely related to a boy's craft work he becomes critical or appreciative, as the case may be, of his surroundings, including his school, the furniture and ornaments in his home, sign writing in public places and the design and decoration of buildings. He begins to understand that good craftsmanship is not merely a question of skill of hand but involves appreciation of the nature of material and of design and the power to give form to images of beauty.

63. We have seen some sensible art teaching in High Schools and Schools of equivalent rank, but on the whole there appears to be a dearth of constructive and critical teaching of the adolescent, and an absence of any conscious relationship between what a boy does during the time he devotes to art as a subject of the curriculum and the remainder of his school activities. Art should not be thrown into the curriculum as a concession to sentiment but should claim its place as a necessary part of each boy's education in the humanities and because the school as a social institution ought to aim at an honest appreciation of aesthetic value in life.

64. It will not be sufficient merely to provide time, space and equipment for Art in the new Higher Secondary Schools. Plans must be made to secure what at present is so patently lacking, namely a supply of teachers whose artistic training and powers of execution qualify them to instruct and criticize as well as to encourage. The importance of this can scarcely be overrated. India, with all its history of artistic achievement, is not doing what it might, through its schools, either to foster among the people generally a concern for aesthetic values or to discover the individual talent which, if properly nurtured, would enrich the country's indigenous art.

#### *Physical Education.*

65. The technical health services do not come within our province, though as we have already remarked one of the greatest needs in India is a school medical service. It is pitiable to see children in schools, sometimes a great many of them, suffering from ailments which, if they had been detected early and treated, could have been cured. But we are concerned, here, with the layman's contribution to health—what may be called physical education. We have seen some exceedingly good physical training—vigorous and effective—and we wish to pay a tribute to the influence of the scout movement on the development of physical education, particularly in the Punjab. But physical education does not consist solely of physical training in the formal sense.

66. Physical education begins in the classroom where children spend most of the day ; and the basis of it is cleanliness of person, hygienic classroom habits, good ventilation, and frequent opportunities for movement, especially for young children. A large number of schools in India—village schools and urban schools—have attractive and spacious playgrounds ; and they are increasingly used not merely for formal physical training but also for organized games.

We could wish however that the playground were more often used for even less formal recreative purposes. Children need frequent changes from classroom work, which involves so much comparative immobility ; they need spells of five minutes or so when they can stretch their limbs and enjoy some free spontaneous movement. It is not a question of having one recess in the morning and one in the afternoon, when all the children are free to use the playground. It is the problem of a carefully thought out programme to ensure that the outdoor " recreation room " is in constant use for recreative purposes, including, it may be, classroom instruction out of doors. This of course is subject to reasonable outdoor weather conditions, of which in Northern India there is fortunately such a blessed profusion for many months of the year.

67. A distressingly large number of the children in India are ill nourished. This is a good reason for being discriminating in selecting those who shall engage in vigorous physical exercises, but it is no justification for keeping any children in a sitting position for such long periods as are customary. On the contrary, the ill nourished require change of posture and recreation as much as any one else. It should also be remembered that physical education is concerned with poise, rhythm and control as well as with muscular development, and that it is a useful personal discipline for young children to be required to leave their classrooms quietly—possibly, if it cannot be avoided, to pass through another classroom with a minimum of disturbance—in order to have a few minutes of physical recreation or relaxation before returning in an orderly manner to their more sedentary occupations. The quickened intellectual response to instruction compensates for the curtailing, by a few minutes, of the time devoted to formal lessons and is a good return for all the trouble which the organization of such recreative periods admittedly involves. We have already said that the infant classes in the Primary Schools are too solemn. One way of allowing a little joy to break up that solemnity is to give the children frequent opportunities of satisfying their perfectly natural desire for physical play.

## CHAPTER V.

### THE TRAINING OF TEACHERS.

68. The key to educational reform is to be found in the training of teachers and in the critical but sympathetic and stimulating inspection of the schools. For work in Primary and Middle Schools, with which we are here mainly concerned, we are of opinion that the training of teachers should consist of two distinct parts. First, a pre-employment training of students in Normal Schools and later refresher courses for practising teachers who have had some years' experience of their craft. The second part of training has not been developed in India to the extent which the conditions of the life and the service of teachers, particularly of rural teachers, demand.

69. If one asks the Heads of Normal Schools how they think their students will be fairing after say three or four years of actual experience of teaching in village schools, one is likely to get an answer which suggests that many, if not most, of them will have lost their enthusiasm and succumbed to the depressing conditions under which they have to do their work.

70. The village teacher may be single-handed. (There are 9,000 single teacher schools in the provinces which we visited). He may have to work in quite unsuitable and overcrowded premises, he may be faced with the complete indifference of parents and neighbours and he may even be subjected to political or other pressure which, if he does not bow to it, will threaten his security of tenure. The head teacher, if there is one, may be unsympathetic, and the children whom he has to teach may be apathetic, troublesome or irregular in their attendance, because of disease or ill-nourishment or from other causes. Moreover, though the teacher may not relish inspection, he will probably not experience enough of it, nor may it be of a kind, to act as a stimulus to the efficient discharge of his duties day by day. Finally, he may be ill-paid and lack the status in the community which his vocation merits. This is a gloomy picture, and of course it is not true of all village teachers. It applies, however, to a great many of them.

71. In these circumstances the Normal School ought, in addition to training the intending teacher in the technical arts of his craft, to attempt to do something to give him "staying power". It ought to aim at fortifying him against disappointment and giving him the spirit to withstand temptations to slackness, so that he may keep his head above water during his early years in the profession. This means, if we may so put it, that the Normal School should concern itself with the social "why" of education as well as with the technical "how" of teaching. If a teacher appreciates his task as an educator and realises the significance of the school in the life of the community he may become proud of his vocation and resist temptations to bring discredit upon it.

72. We are aware that such a view of the training of teachers may be interpreted as encouraging the provision of academic lectures on the history of education, sociology, psychology and ethics. Such academic instruction would be inappropriate in the Normal Schools if only because of the meagre academic qualifications required for admission. But, even so, these young teachers should know something of the history of their own country and its educational effort, should make some attempt to grasp the social problems of the local communities which they will serve, and should be encouraged to understand the nature and the needs of young children as well as the technique of instructing them. Further, students in Normal Schools should, if possible, derive from their training some principles and motives which will encourage them to take an ethical view of their vocation.

73. We should not expound this view of the function of the Normal School if we had not been encouraged by seeing it worked out, at any rate in part, in one or two of the existing institutions. In these Normal Schools there is an attempt to develop the cultural and sociological experience of the students as well as to give them sound instruction and practice in the arts of teaching.

74. Unfortunately there is a grave defect of general organization which must hamper the Normal Schools in their task. The educational qualification required for admission to a Normal School is the satisfactory completion of the middle school course. This is a very meagre qualification but in present circumstances it is not reasonable to demand more. The lowest age of admission to the Normal School is, however, a year or two in advance of the age at which an intelligent boy would complete the middle school course. There is thus a gap during which some boys, having no defined course to follow, may be lost

to the profession or spend their time, until they are old enough to enter the Normal School, unprofitably. We realize that 14 or 15 years of age—the ages at which normally intelligent boys pass out of the middle school—is very early to commit anyone to teaching as a profession. But in present circumstances we think that the future teachers in primary and lower secondary schools should be “caught” then; and instead of being given a comparatively short course a year or two later should at once be admitted to a vocational course of at least three years duration. In other words the lowest age of admission to the Normal Schools should be the age at which the ordinary boy would complete the middle (or lower secondary) school course; and the length of course in the Normal School should be at least three years.

75. Such a course would enable provision to be made not only for technical training in teaching but also for a continuation of the student's general education. It would also give more time for the kind of training, some constituents of which we have already indicated, which in India and elsewhere is so frequently described as “character training”. It is easy to talk of character training but very difficult to provide it. It is possible only if the institution, whether it be a Normal School or any other type of school, becomes an organic society whose health depends upon the behaviour of those who compose it. It is not sufficient, as so often seems to be assumed, that there should be a wholesome team spirit inculcated by games and other physical activities. There must be a conviction on the part of teachers and students that the social and intellectual life of the society flourishes when individuals behave with courtesy, generosity and courage and wilts under pettiness, jealousy and intrigue.

76. It may be argued that the teacher of little boys of from 5 to 8 years of age does not need for teaching purposes the more or less extensive general education which he would acquire in three years. Such an argument must be resisted. The Primary Teacher may not require it as a narrow teaching equipment but he does require it for broad professional purposes. The teacher, whether he be in a High School or an Infant School, belongs to a distinguished and honourable profession, and everything that can be done should be done to give him an education which may lead him to intellectual or cultural interests outside the narrow range of his teaching and may provide him with a status in the community of which he may legitimately be proud.

### *Refresher Courses.*

77. If the spirit of those who have had some training before entering upon their work is to be kept alive and if their technical skill as teachers is to be improved it is vital that they should have opportunities from time to time to attend refresher courses. Many a young teacher finds by bitter experience that an isolated school to which no one pays any friendly attention is a very different thing from the practising school in which he first displayed his teaching skill under the guidance of sympathetic tutors. He may find too that life in the village is dull and unenterprising compared with that which he lived with congenial fellow students in the Normal School. After a few years the first flush of enthusiasm may wane. Even if he does not become slack and indifferent he may begin to fall back on the first resort of the teacher on



the down-grade—occupy the stage himself to the exclusion of active work by the children ; or sink to the last resort—the constant use of the stick. He may, in short, lose the staying power to which we have already referred.

78. A refresher course may make all the difference to the morale of such a teacher. But such a course must not be narrowly conceived. It must bring him back to the company of fellow teachers of his own standing under social and domestic conditions which are attractive. It must also provide him with instruction by those whom he recognizes as superior to himself in the mastery of the craft which he practises. And it must recall him to a world wider than that of the school and so link him up again with the interests of society at large. This last point is very important ; and there must surely be in India people of goodwill and distinction, not directly connected with education, who would be willing to attend refresher courses for the purpose of living with teachers for a few days and talking to them about experiences and issues in a way which would release them from too narrow a concern with their own problems and relate them and their vocation to the world at large. This kind of instruction and stimulus, given after the teacher has been at work for a few years, is the other half of training.

79. The time may not yet be ripe for the logical out-come of this conception of the two-fold nature of the training of teachers. But in course of time there ought to be in each province a government training college comfortably housed, well equipped, and organized and staffed for the purpose of providing a sequence of refresher courses of one or two months duration throughout the year. Such courses would not replace local refresher courses. On the contrary the College would be the centre from which local courses would derive inspiration and practical help. The Principal of such a College should receive a salary and status commensurate with the importance of the institution, and his staff should always include a number of the best teachers and inspectors, who would be withdrawn for a period from the field of school and inspection in order, as a distinction, to serve as instructors. Such a staff training college would not only keep a number of practising teachers educationally alive, it would also invigorate the inspectorate.

## CHAPTER VI.

### ADMINISTRATION AND INSPECTION.

80. The schools of India are not suspended in mid-air. They are borne on an administrative machine. It is not necessary for our purpose to describe in detail machinery which varies slightly from province to province. Broadly speaking it consists of the Minister of Education, the Secretary for Education, the Director of Public Instruction who may also be Under Secretary for Education, possibly a Deputy Director of Public Instruction, a corps of Inspectors and the usual minor personnel of a Government Department. It also consists, so far as the administration of some of the schools is concerned, of Municipal Boards and District Boards to whom the central governments have relinquished the control of Vernacular Education. There is also a statutory body known as the Board of High School and Intermediate Education which controls and conducts the examinations in High Schools and Intermediate Colleges

and has other functions in relation to them. We must also include within the administrative machine the committees or governing bodies which provide and maintain, with government aid, the many voluntary educational institutions. The area of each province is divided into circles or divisions, each of which is under the supervision of an inspector with a staff of subordinate inspectors to assist him. This is but a skeleton of the whole structure and it does not purport to be comprehensive. It does however show that the machine is complicated ; and it is but a platitude to say that the strength of the whole is the strength of its weakest part.

81. Educational reform depends primarily upon the spirit and the competence of the teachers ; but it is idle to hope for consistent improvement in the service of education as a whole unless administration is efficient. Two things at least are necessary if teachers are to be given a chance of doing good work. There must be integrity of administration throughout and there must be continuity of educational policy.

82. It is clear to any close observer that, in India, decisions are too often taken and appointments and promotions too often made on grounds not concerned primarily with the welfare of the schools and of the children in them, but to placate or promote political, communal or family interests. We are not of course referring to action taken to implement the political programmes of parties which may reach power, nor to decisions taken in accordance with recognised agreements about such things, for instance, as communal quotas. Such programmes and such agreements may, sometimes, have unfortunate educational results but the decisions based on them are open and above board. We refer rather to the exercise of less legitimate communal, political or family influence.

83. It may be argued that minor officials or local bodies sometimes seem to have no alternative but to succumb to communal or personal pressure in the exercise of their duties ; or that political considerations make it expedient for those in authority sometimes to depart from a dispassionate treatment of a difficult situation on its educational merits. No one who has any knowledge of India can afford to treat such arguments lightly ; but there is a vital relationship between integrity of administration and the faithful execution of policy, and anyone who has a vision of what an enlightened policy in education, vigorously administered, might do for India can only regard maladministration, from whatever cause it arises, as a major tragedy. In this connexion we would emphasize what has so frequently been said by other observers : that provincial governments have relinquished too much power in the field of education to municipalities and district boards ; and that educational reform is intimately bound up with governments recovering some of that power to themselves or devising ways of insisting upon honest and effective administration by local bodies.

84. We therefore urge that the Indian education service needs a greater austerity of administration and more consistent disciplinary action by authority when groups or individuals, no matter what their status, fail in their duty by allowing their actions to be influenced by improper considerations. If the immediate result of such austerity and such disciplinary action were to dislocate the existing system there would at least be the consolation that new

foundations were being laid on which another, even if a less pretentious, structure could be built.

85. There is one administrative feature of the system which appears to us to be particularly undesirable. The Secretary of the Education Committee of each District Board is one of the government inspectors responsible for the schools in that area. Such an arrangement as this may be necessary as a stage in the development of local self-government, though it is obvious that an inspector of schools cannot work with the maximum of efficiency if he is called upon to serve two masters. But in the United Provinces the position of the Inspector is even more unfortunate. The Government, we understand, is under a statutory obligation to transfer the Inspector from the District if the Education Committee of which he is the Secretary passes a resolution of no confidence in him. This is an intolerable position in which to place an inspector ; and it is no answer to say that transfers on this account seldom if ever take place. It is not definitive action on the part of the local body which matters but the power to take such action. And of course the position is not redeemed by the fact that the Government, if it were called upon to transfer an inspector on these grounds, could make it clear to him that they themselves had no fault to find with him.

86. When local administration can be relied upon for integrity and efficiency, education committees will presumably have their own officials responsible to them alone. The government inspector will then be in a position to do his work effectively ; that is a position of dispassionate detachment in which he can act, advise and inspect without fear or favour.

#### *Continuity of Policy.*

87. So far as continuity of policy is concerned the present administrative arrangements are, in our view, open to grave objection. The Director of Public Instruction appears to combine the functions of a chief inspector and of a permanent deputy head of a department, in which latter capacity he may or may not be Under Secretary to the Government for Education. He belongs to the educational service and, as a rule, reaches the position of D. P. I. only after some experience as a teacher and, possibly, as an inspector. He may have direct access to the Minister of Education and he may in practice be the chief executive officer of the department of education, but he is not its administrative head. The administrative head of the department is the Secretary to the Government for Education, and this post is normally filled by an officer of the I. C. S. He is permanent in the sense that he is a permanent officer of the Government, but he is temporary in that his appointment as Secretary for Education is normally for a short period of years, after which he may, indeed, serve for an extended period but is more likely to be appointed to some other post in the Secretariat, in the Executive branch, or elsewhere. Moreover he may be Secretary to the Government not only for education but for some other subject as well, and thus have responsibilities to more than one Minister ; and he probably reaches his post without previous experience of the administration of education except insofar as he has been brought into contact with it as a District Officer.

88. Education is an extensive and a technical subject ; and its administration inevitably involves delicate and complicated issues. We do not believe

that the formulation and execution of long range policy in education, as distinguished from mere temporary expedients and experiments, can be effective unless one condition, at least, is satisfied. The ultimate direction of education, subject of course to the Minister, must be in the hands of someone whose knowledge and experience of educational administration and whose permanence in the education service give him the qualifications and the right to deal authoritatively with the administrative aspects of educational problems and, with the advice of the D. P. I., with their more pedagogic aspects. Such permanence and such qualifications are necessary not only for the day to day administration of the education department ; they are also essential if the Secretary is properly to discharge his duties to the Minister for Education.

89. We are not suggesting that the Director of Public Instruction, with his present duties, should also be Secretary to the Government for Education. On the contrary we think the D. P. I.'s are already too much immersed in administration for the effective discharge of all their duties, including an authoritative direction of the Inspectorate, based on a personal knowledge of individual Inspectors of all grades and a first-hand knowledge of the content of education provided in the schools. The Director of Public Instruction ought to have secured to him the time and the opportunity for studying educational problems in general and for informing himself about local issues so that he can direct his staff with authority and advise the Secretary and the Minister with conviction. Incidentally we may remark that since there is a significant difference between the connotation of the word " instruction " and that of the word " education ", it would be more in accordance with the responsibilities of his office if the Director of Public Instruction were styled the Director of Education.

### *The Inspectorate.*

90. The chief duty of an Inspector is to inspect schools. He must do this sympathetically and tactfully and give advice based on his own knowledge and experience which will help the teachers to make their schools enlightened and humane institutions. He should feel free, and of course be qualified, to praise or to criticize ; but his criticisms should be calculated to encourage and not to intimidate. As schools are intended for the education of children his main concern must be to investigate the way in which the children are occupied during their school day. He must find out what they are doing, what they are learning and, so far as he can, what habits they are acquiring. In the course of his duties he will of course examine registers and records to make sure that they are faithfully kept, and he will inspect the premises in order to discover whether they are suitable, not overcrowded and are kept clean, wholesome and in good repair.

91. One thing the Inspector must try to discover about a school is whether it is a happy institution and is related to the needs of the community which it is intended to serve. Are the children enjoying their school life ? Are the staff active and contented ? Is the school a real society or is it only a box of classrooms ? To answer these questions he must probe into the work of the school to find out whether there is a reasonable balance of intellectual, manual and physical activities, whether the children are really at work on tasks which are within their competence and in a way which brings them

satisfaction, and whether they are entrusted with such responsibilities for the social life of the school as they are fit to bear. But a school consists of teachers as well as children. The inspector ought, therefore, to be concerned with whether there is mutual confidence between the Headmaster and his staff and whether those who merit it are afforded freedom to plan their own schemes of work, or at any rate to make some departure from centrally devised schemes. But in all his dealings with the school an Inspector must aim at securing the confidence of the Headmaster. He must give the Headmaster reason to feel that an Inspector is not simply a "professional critic", but a man with whom he can talk freely and frankly about his problems, and from whom he will hear the truth, told sympathetically, but without disguise. If the inspector does not confine himself to the school but makes himself familiar with the area which it serves he may discover whether the school is recognised as meeting local needs and whether it commands the interest and allegiance of parents and the community generally.

92. The duties of an inspector are onerous, and unless he can pursue them without undue distractions the schools and the children in them suffer. There are two suggestions which we would make about the work of inspectors in India. They are frequently called upon by authorities other than the education department to undertake the control or assist in the direction of work which is not strictly within their sphere. This is, no doubt, a tribute to them; and many of the activities they are asked to help or promote are good in themselves and may sometimes have a relation, direct or indirect, to the work of the schools. It is reasonable that inspectors should play a part in linking up the various social services and should give their blessing and their aid to local efforts not necessarily educational. But the moment an Inspector labours under the feeling that he has more than one master or that the inroads made on his time by having to undertake outside activities is hampering the discharge of his duties as an inspector of schools he loses his significance to the schools and the teachers and ceases to be the asset to the education service which an inspector should be. We would therefore urge the departments of education to ensure that their inspectors act under their direction and are not too often placed at the disposal of other authorities.

93. Our other suggestion is concerned with the travelling allowances of inspectors. We understand that these are subject to an annual limit for each inspector and that in consequence inspectors are sometimes hampered in their work by the necessity of not exceeding it. There are no doubt financial advantages in this system and of course it prevents any extensive malpractice by an inspector who is tempted to misuse public funds. But we feel bound to say that unless the allowance is so large as never to be exceeded, in which case it has no purpose, the imposition of a limit to the travelling expenses of a conscientious inspector, who is anxious to do the best he can for his schools, is very undesirable and bound to lead to exasperation and a sense of frustration. We suggest that a more elastic system of travelling allowances for inspectors, with necessary safeguards, could and should be devised.

#### *Visits abroad.*

94. We consider it extremely important that the more responsible inspectors should have opportunities of studying educational practice and methods

of inspection in other countries. It is desirable also that carefully selected teachers should pay visits abroad. But if the public funds available to meet the cost of such visits are strictly limited we believe that they could be most usefully expended in securing a wider experience for the inspectorate.

### *Conclusion.*

95. There are many aspects of general education on which we have not touched or to which we have made but a passing reference. In particular we have not examined the possibilities of the movement for adult education, nor have we examined the part which the cinema and broadcasting might play in the schools. These are important matters but they are subsidiary to the three main issues : the better training of teachers, a wider conception of the content of education and administrative reform.

96. There are more than 250 million people in British India ; and the majority of them are illiterate. Some people are therefore tempted to talk in terms of mass education. The temptation should be resisted. Magnitude of population is wholly irrelevant to the purposes and to the methods of education ; and, moreover, mass movements tend to deny individuality and to strive after a uniformity which is incompatible with the dignity and the diversity of the human spirit. Education, on the other hand, is concerned with the health, happiness and development of this boy and this girl, this man and this woman, regarded as units in a society which is none other than themselves. The task of the school is to train each individual, according to his capacity, to acquire the knowledge and the skill which will give him satisfaction as an individual and also equip him to take his full share in the work of the community ; and, through its corporate activities and its social ideals, to nurture its pupils in the positive virtues and disciplines that are necessary for the spiritual integrity of a society and for its friendly relations with other societies.

97. Education, whether it be general or vocational, is thus concerned with behaviour. Young people who have had the advantage of membership of a school community up to the threshold of manhood should develop a responsive yet critical attitude to knowledge and ideas, should be equipped to occupy themselves profitably without the constant ministrations of other people, and should be inspired by ideals of courtesy and generosity in their human relationships. Schools will inevitably fail to achieve these desirable ends if they concentrate exclusively on preparing their pupils for a life to be entered upon at some future date. An institution which purports to educate young people must offer them life here and now in a living society—a society which depends for its vigour and happiness partly upon their own initiative and conduct. It is true that the final school of behaviour is the wider world in which each of us has ultimately to make his way in company with his fellows ; but, even so, the best preparation for tomorrow is a well spent today. It is idle to expect the younger generation to make a contribution to the good life of their country unless, as individuals, they are offered satisfying personal and social experiences in the schools.

## CHAPTER VII.

## SUMMARY OF SUGGESTIONS.

98. The following is a summary of our main suggestions with regard to general education and administration

- (a) Infant classes should, so far as possible, be entrusted to trained women teachers ; and for this and other reasons the development of educational provision for girls and women is of paramount importance.
- (b) The education of children in the Primary Schools should be based more upon the natural interests and activities of young children and less upon book learning. Concentration on literacy as a narrow objective is unsound.
- (c) The curriculum of the rural Middle (or Lower Secondary) Schools should be closely related to the children's environment ; and if English is taught to any children of "middle school" age it should not be allowed to result in an excessive amount of time being devoted to linguistic studies.
- (d) The vernacular languages should, so far as possible, be the medium of instruction throughout the High (or Higher Secondary) Schools, but English should be a compulsory language for all pupils in these schools.
- (e) The teaching of English should be made more domestic and less attention should be devoted by the average boy to the study of English "prose and poetry"—arrangements being made to meet the needs of those boys specially qualified to pursue more advanced English studies.
- (f) Manual work, that is creative manual activities of diverse kinds, should be part of the curriculum of every school.
- (g) More systematic attention should be paid to the teaching of Art ; and steps should be taken to secure for the High (or Higher Secondary) Schools a supply of qualified teachers of Art.
- (h) Physical education should not be limited to formal physical training and organized games. Playgrounds should be more consistently used for purely recreative purposes, especially in the case of young children.
- (i) The training of teachers should be regarded as consisting of two stages : pre-employment preparation in a Normal School or Training College, followed by systematic short courses of training for teachers who have had some experience of their profession. In due course a government "refresher" Training College should be established in each province.
- (j) The pre-employment course of training for teachers of Primary and Middle (or Lower Secondary) Schools should be a three year

course following, without any gap, the completion of the Middle (or Lower Secondary) School course.

- (k) There should be greater austerity of administration in the education service, more consistent disciplinary action by authority in cases of deliberate maladministration, and recovery by governments of some of the powers relinquished to local bodies.
- (l) The formulation and execution of long range policy in education demands a more permanent tenure of office by the administrative head of the Department of Education.
- (m) Inspectors should not be subjected to the distractions which come from serving more than one master ; and their scale of travelling allowances should not be so limited as to hamper the efficient discharge of their duties.
- (n) Inspectors and, if funds allow, selected teachers should be offered facilities for studying educational methods abroad.

S. H. WOOD.

*May, 1937.*



## PART II.

## VOCATIONAL EDUCATION.

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## CHAPTER I.

## THE NATURE OF THE PROBLEM.

*Its difficulty and complexity.*

1. The problem of devising a scheme of vocational education in a country like India, where the industrial system is developing, and where the provision of vocational education has hitherto been small, is difficult and complex. It is difficult, because the existing system of education has been carried on for generations with the main object, in its lower stages, of securing permanent literacy in the mass of the population, and in its higher stages, of continuing the literary type of education with little direct regard to the needs of industry and commerce. In general, this system has been accepted as suitable, and to convince parents in India that their sons may with advantage devote themselves to the accomplishment of educational aims not yet universally recognised as worthy may prove a formidable task.

As regards the complexity of the problem with which we are faced, it is to be taken into account that the intention of any pupil following a vocational course of instruction is perfectly definite: he proposes to equip himself for a career in a particular industry, perhaps in a particular occupation within that industry, and will be not merely disappointed, but actually discontented, if he finds no suitable post open to him on the completion of his course. A complete solution of the problem cannot be arrived at, therefore, without a consideration of the main activities of industry and commerce, and a classification of these into homogeneous groups, for each of which a scheme of vocational education has been planned.

*A Dilemma.*

2. Industry in India is usually carried on in small undertakings, the volume of large-scale industry being very small considering the immensity of the population. The number of great industrial undertakings is, in fact, not yet sufficient to make full use of the natural resources of the country for the good of the nation as a whole. Although we are not directly concerned with economic questions in this inquiry, it is relevant for us to point out a serious difficulty which confronts the various provinces in planning their industrial development.

No country can initiate and carry on industries on a large scale, unless it has an adequate supply of men specially trained for the direction and management of large industrial concerns, as well as of others specially qualified for the minor, but very important, supervisory posts in them. On the other hand, it cannot be expected that capable and ambitious men will devote themselves to acquiring this special knowledge and skill, unless they see a reasonable prospect of exercising it and gaining a decent livelihood thereby. While many men will face an adventure, comparatively few will join a forlorn hope, on whose success or failure their whole fortunes and those of their wives and children are directly dependent.

*The need for the cautious expansion of vocational education.*

3. It is for this reason that we are of opinion that the expansion of vocational education in India should be begun with caution and with full regard to the development of organised industry. It would be a great misfortune if a large body of men received a prolonged technical training, and on its completion found that they had no opportunities of using the knowledge they had acquired.

*The importance of flexibility.*

4. If, however, vocational education aims at producing a corps of workers whose minds are flexible, and whose knowledge is capable of wide application, the risks are far less than if it attempts to train a number of persons with narrow outlook and a limited range of skill. Accordingly, vocational education should not be extremely specialised in character, except in its advanced stages, but should aim at imparting a sound knowledge of fundamental principles which are applicable to different tasks, and as high a degree as possible of skill in thus applying it.

If vocational education is broadly based, and if it is successful in developing in the students certain personal qualities, which are as much moral as intellectual, that is, uprightness, diligence, accuracy, self-reliance, resourcefulness and the habit of co-operating with others, we have little fear of the failure of industry and commerce to absorb, in one way or another, a somewhat larger number of trained men than an exact calculation of their existing needs would appear to justify.

*The need for a Survey.*

5. The creation of a suitable system of vocational education, which produces annually a sufficient number of qualified recruits for each branch of industry and commerce and does not leave a number of potential recruits unemployed, demands that every province shall make an industrial survey, in order to determine the types of instruction to be provided, the stage to which the studies in each type shall be carried, and especially the number of recruits which can be absorbed. In an old industrial country this is not vitally necessary, since parents can usually estimate with some approach to accuracy the prospects of employment of a suitable kind for their children : but even in such a country, regular surveys of the field of potential employment would have value. In India, whose industrial and commercial organisations are not yet highly developed, surveys of this kind would be even more useful : they are indeed essential, if there is not to be either waste of effort and consequent disappointment, or an inadequate supply of men trained vocationally. Our task of advising on vocational education has been hampered by the lack of these surveys, for our investigation is just as much industrial and commercial as it is educational. All that we have been able to do is to make as full enquiries as to the existing facilities for education, and the existing industrial and commercial features of the provinces visited, as the time at our disposal has permitted : and on the basis of these inquiries to prepare an educational frame-work into which, we believe, vocational schools and courses of instruction can be fitted without difficulty.

## CHAPTER II.

## VOCATIONAL EDUCATION.

*The General purpose of education.*

6. The assumption is often made that education for work in industry and commerce is necessarily on a lower plane than is literary education, since it is concerned with material things, while literary education, being concerned with things of the mind, aims mainly at giving students "an acquaintance with the best that has been known and said in the world and thus with the history of the human spirit". Such an assumption is, however, based on an altogether inadequate view of the function of education, whose full purpose is far wider. It aims at nothing less than the cultivation of the whole powers of the mind, body and spirit, so that when the period of formal education is ended, the pupil possesses both the desire and the ability to devote these powers vigorously and effectively to doing his duty in the complex society in which he lives. It is impossible for him to do this unless he has been brought up to comprehend his environment. His early studies of history, geography and literature ought to have given him some knowledge of the way of life, the doings and the thoughts of his forbears and his neighbours, both near and remote; he should have gained some facility in expressing his thoughts with accuracy, both in speech and in writing; and he should have been practised in the estimation of those quantitative relations which are included in the elementary study of mathematics. As soon as he leaves school, he will find himself compelled to use his powers for the satisfaction of his primary needs of food, clothing and shelter, as well as of other needs. He may do this directly by working on the land, by spinning and weaving, or by building; or, as is usual in a highly organised society, he may satisfy these needs by carrying out other duties and exchanging the goods he produces, or the services he renders, for the results of the labour of other men. Whether his services are direct or indirect, and whether they are primary or secondary, the work of every diligent man, whatever form it may take, is valuable, and even essential, to the welfare of the society to which he belongs. There is nothing ignoble in this work and the task of preparing pupils to do it energetically and with goodwill cannot be regarded as intrinsically less worthy than the study of great literature. Vocational education is emphatically not on a lower plane than other forms of education; it is complementary to them.

7. During our investigation, we have discerned, amongst some of the persons we have met, a tendency to assume that the proper aim of every good student is to proceed to the university and, after completing his studies there, to enter upon a professional career outside industry and commerce: and that only students of inferior ability ought to aim at a career in business, either when they have finished their general education, or after they have received some measure of vocational training in a technical school.

Such an assumption is, in our view, unsound, since it is based on a belief, whether conscious or unconscious, that a country can maintain and develop its trade and industry through the efforts of second-rate men. We are very far from suggesting that every man of ability, or even a majority of such men, should enter upon a career in business. We do suggest, however, that the

conditions in India, as in every country engaged in the difficult task of developing its industry and trade, demand that business shall have at its service a fair share of the best brains available. We are aware that a number of university graduates are preparing themselves by following post-graduate courses for advanced work in industry, and we are convinced from what we have seen of the courses that these men will give a good account of themselves. At the same time, we believe that other young men of equal ability who aim at occupying posts of responsibility within the workshops themselves would do well to enter industry at the end of the High School stage, in order that they may become thoroughly accustomed, while still at an impressionable age, to the atmosphere and the conditions of the commercial production and distribution of goods. We have stated our opinion that this is necessary for the welfare of the community : and we would add that we are convinced that of two men of equal ability, the one who has elected to finish his general education earlier and has subsequently done his utmost to equip himself thoroughly for work in industry or commerce is, at the age of 21 or 22, as well educated as the other who has devoted himself entirely to study in a university atmosphere.

### *The Unity of General and Vocational Education.*

8. General and vocational education ought not to be regarded as essentially different branches of education, but rather as the earlier and later phases of a continuous process, fostered by the community, with the object of helping the immature child to develop naturally into a good citizen. If we are to define what we understand by a good citizen, we would say that he is a man who is suitably equipped for the effective performance of his duty of advancing the welfare of the society to which he belongs ; that he performs this duty with goodwill, zeal and a respect for the feelings of others ; and that in so doing, he brings pleasure to himself, benefit to his family and satisfaction to those about him.

9. While the aims of general and vocational education are thus the same in essence, the curricula followed in the two types of school will, at first sight, appear to show considerable differences. In a wisely planned scheme of education, these differences are, however, more apparent than real. Each subject in the vocational school will have its origin in the non-vocational school ; it will in fact be nothing more than an extension of it. Elementary notions of number and the beginnings of arithmetic will gradually merge into mathematics ; the observation and recording of the more obvious phenomena of nature, and simple explanations of these, will develop into science ; crude hand work with few or no tools will become skilled manual work with more complicated tools or with machines ; the powers of expression by the tongue, the pen and the pencil will be extended ; and new and more conventional methods of representing on paper the appearance and dimensions of solid objects will be introduced.

10. It might be supposed, from our constant insistence on the essential unity of the educational process, whatever the age of the pupils or their educational aims, that we should recommend that general and vocational education might therefore be given in the same school. Our experience and knowledge of various other countries, in which technical education has reached a high stage

of development, have shown us that it is unwise to have in the same school pupils who have not yet made up their minds—or had the decision taken for them—which career they will follow, and, at the same time, other pupils for whom the decision to enter upon a particular career in life has already been made. The former are still economically dependent. So are the latter, but they are now definitely on the way to economic independence; and the two groups of pupils, working with diverse aims, do not readily merge into each other and form that single coherent society which every good school constitutes.

11. The question naturally arises as to whether a school preparing pupils for industrial callings can be carried on in the same premises as one whose pupils intend to occupy posts in commerce. There is no doubt that it can, though there are two conditions for the success of the arrangement. The first is that the principal of the school shall not favour one department at the expense of another: the second is that the rooms devoted to the practical work of one department shall always be at its own disposal and not liable to be trespassed upon by another department.

*Vocational education not a matter for the School alone.*

12. Just as we emphasise the importance of regarding vocational education as being an extension of general education, so we stress the necessity of looking upon it as a specific preparation for work in industry, commerce and the professions. It is accordingly not a matter for the school alone, since teachers and school authorities have neither the knowledge nor the experience needed to determine with precision the aims and the volume of instruction to be provided for any particular branch of industry or trade. It is essentially part of the system of recruitment for employment, if we define recruitment very broadly as including:—

- (a) The instruction, more or less specialised, which is given to a pupil in school after he, or his parents, have decided what career he shall follow.
- (b) The 'placing' of the pupil in employment.
- (c) The gaining of practical experience accompanied, in some instances by further instruction in school.

It is this process of recruitment, consisting, as it does, of a related series of educational experiences, for every boy or girl aiming to be a skilled worker which Lord Eustace Percy has described as presenting "the most serious problem that confronts this country, in common with the whole industrial world, at the present moment". It is true that he was speaking more particularly of Great Britain, but his statement is just as applicable to India.

13. Every great industrial country of Europe is now exhibiting a zeal for the development of technical education which has been described by a German writer as being "almost feverish", and in every one of them steps have been taken to enlist the interest and co-operation of industry and commerce in the task of ensuring that the instruction shall be both appropriate and sufficient. India cannot afford not to follow their example.

In the provinces we have visited, this close and systematic co-operation has not yet been established, although it is a factor which is absolutely essential for the successful and economical working of any scheme of vocational

education. Further reference to this matter is made in Chapter IV of this report, but, at the outset, we wish to stress the necessity for the establishment of a real partnership between education and business in the work of creating a service which shall be of permanent value to the nation.

### *The Expansion of Vocational Education.*

14. Judging from what we have heard from many persons in India, there is considerable enthusiasm in favour of the swift evolution of a widespread system of vocational education. This is quite natural, since there is abundant evidence that while India is rightly demanding more and not less education, the products of an educational system which is predominantly literary are in many instances finding it difficult to put to profitable use the learning they have acquired. In addition to this negative reason for providing other paths to learning, there is also the positive reason that there is everywhere a keen desire to see India more prosperous, and a very general belief that a more adequate supply of vocational education would lead to the further industrialisation of the country and hence to increased prosperity. While we are convinced that the development of organised industries, carried on on the large scale, would do much to secure greater use being made of the raw materials existing or being produced in India, we do not feel at all certain that the slow rate at which such industries can normally be built up is generally realised. The existence of skilled workers, though essential, is not in itself enough to create organised industries. Capital, means of transport and reasonably assured markets are also needed for their creation and growth. Accordingly, while we very firmly believe that it is right to begin the systematic expansion of the facilities for training the workers of various grades on whom the effective conduct of organised industry depends, we hope that this expansion will not be so swift as to overtake that of organised industry itself.

15. Although we thus urge a certain degree of caution in the plans for educating men to be employed in organised industry, we do not think it necessary to utter such a warning in connection with schemes for improving the qualifications and skill of either farmers or small-scale workers, since it is on the intelligence and skill of these men that the prosperity of India is now, and for many years to come, will be greatly dependent.

## CHAPTER III.

### SOME CHARACTERISTICS OF INDUSTRY AND COMMERCE IN INDIA.

#### *Agriculture.*

16. We begin our remarks on some of the characteristics of industry and commerce by reference to agriculture, since this is the most important of all industries and gives employment to over two-thirds of the total working population of India. In general, the holdings are small and the cultivators live in villages, isolated from one another by the lack of means of communication and transport. The result is that it was for centuries customary for the farmer to content himself with the production of sufficient for the needs of himself



and of those in his immediate neighbourhood. With the growth of communications and the establishment of co-operative societies, he may gradually find wider markets for the produce of his land, as well as for the articles he may learn to make during the less busy seasons of the year from the raw materials available to him. But the growth of markets and the raising of the standard of life in villages are dependent on the cultivator being able to produce more than is needed by himself and his family. It is therefore of increasing importance that the land should be utilised to the best advantage, and this can only be brought about by improving the methods of farming, based on greater knowledge, and by convincing the cultivator that he will profit by the adoption of new methods.

The problem of improving the lot of the villager by better education is formidable. The population consists mainly of small holders; their villages are generally isolated both from one another and from towns; they are mostly illiterate; and they have a reluctance to abandon old customs and adopt new methods.

### *Small-scale and Cottage Industries.*

#### 17. (a) *In rural areas.*

The conditions under which small-scale and cottage industries are carried on in rural areas have been discussed fully in the Report of the Royal Commission on Agriculture (1928), who began their review of "Rural Industries and Labour" by pointing out that "the village cultivator, within limits, is an expert in his own subject, just as a blacksmith, or a carpenter or any other mechanic is in his". They went on to say that it is only in exceptional cases that the agriculturist can be anything more than an unskilled labourer in any industry other than his own; and, further, that "the agriculturist who seeks to change his occupation and become an industrialist must be prepared to undergo the training necessary to make an efficient one".

With these facts in mind, the Royal Commission proceeded to consider how village cultivators might usefully occupy their spare time, and after examining various suggestions, reached the conclusion that "the chief solution of the problems of the cultivator is intensification or diversification of his agriculture" and that "the possibilities of improving the conditions of the rural population by the establishment of rural industries are extremely limited". After visiting a number of Indian villages, we are in entire agreement with this expression of opinion.

They mentioned, however, certain spare-time employments which might, in some areas, be available for rural workers; amongst these were cotton ginning, rice mills and sugar refineries. They thought also that an increase in the number of implement makers throughout the country seemed, on the whole, to offer considerable promise.

From our point of view, the most important suggestion was that the more progressive village artisans should be trained "to effect repairs, to stock and fit spare parts and to handle successfully the improved types of machinery which are bound sooner or later to be introduced". We were glad to note during our inquiry that, in several places which we visited, this kind of training is being given; and we were interested to see also the very useful work

being done by the school of tanning in the Punjab in teaching better methods, and the excellent influence which it is exercising in villages.

The suggestion that village artisans shall be trained to handle machinery has even more force now than it had when it was made, since electrical power is always being distributed more widely through the work of the hydro-electric engineers. It seems probable that this factor will ultimately affect profoundly the spread of small-scale industries in the rural areas of both the Provinces.

#### 18. (b) *Other small-scale industries.*

The conditions of the small-scale industries and occupations generally in India were discussed in the Report of the Indian Industrial Commission (1918). They divided them into two main types :

- (i) Those which compete directly with organised production, such as weaving and certain branches of metal work, and
- (ii) Trades like carpentry and blacksmith's work, which are usually carried on as handicrafts even in those workshops engaged in large-scale production.

As regards the former group, they said that what is needed is that the workman shall be equipped with better appliances, and that he shall have the ability to use these effectively. As regards the latter group, they pointed out that the quality of the work and its speed depend entirely on the personal skill of the workman. While the Commission expressed the view that the training of the handicraftsman working on his own account ought to be different from and more elastic than that of the craftsman who becomes a unit in organised industry, they indicated the need for training both types.

19. Manufacture on a small scale is very prevalent in India. It is liable at all times to be displaced, either wholly or in part, by manufacture on the large scale in factories. A great part of Europe and of the United States of America have seen such a displacement, and it is not unlikely that India also will witness it. Even in the intensely industrialised regions of Europe and America, however, small-scale industry is, in some branches, able to face factory competition successfully. It continues to hold its own very frequently in the manufacture of goods not needed in large quantities: for example, practically every small town in England provides employment for a jobbing printer. It continues to flourish in those branches of manufacture also where the goods produced have to possess an individuality and character of their own: thus, boots, men's and women's clothing and jewellery are still made in Europe to suit the wishes and tastes of individual consumers, though the bulk of the boots and shoes, as well as of the clothing, sold in many parts of Europe and America are now produced in great factories. There is no reason to suppose that the kind of small-scale production we describe will disappear while the present economic conditions exist.

20. When we look at the list of goods produced on the small-scale in India, there is clearly a possibility—if not indeed a probability—that the task of manufacturing them will be transferred to an increasing extent to organised industry carried on in factories and employing machines to do the work now

done by hand. If the dislocation of labour due to this is not to lead to further unemployment, or if, at least, the speed at which the centralisation of industry into factories is to be adjusted in order to give the small-scale workers the opportunity of adapting themselves to the changing conditions, definite and speedy action is necessary. The small-scale industrialist must be so educated and trained that his goods possess individuality and character : and this involves far greater attention being paid to his education, and especially to his training in art.

### *Organised Large-scale Industry.*

21. The Royal Commission on Labour in India, who reported in 1931, stated that to a large extent factories, mines and even railways are the creation of the last generation. In support of this statement, they pointed out that in 1892 the total number of persons engaged in these industries was about half a million, while in 1929 it was about two and a half millions. In spite of the check to progress which has been experienced, they expressed the opinion that, given settled conditions, factory industry has still a long period of expansion before it. In this connection, it is significant that while there was a slight decrease in the total number of workers engaged in industries from 11 per cent. in 1921 to 10 per cent. in 1931, the number of persons engaged in "the manufacture of chemical products", in the "production and transmission of physical force, that is, in heat, light, electricity, motive power, etc." and in "making, assembling or repairing motor vehicles or cycles" shewed considerable increases. These figures are consistent with a growth in the total volume of organised industry.

The Indian Industrial Commission which reported in 1918, looking at organised industries from the point of view of the actual training needed for their personnel, divided them into two classes :—

- (a) The "manipulative industries", *e.g.*, certain branches of mechanical engineering, the pottery and glass industries, textiles, tanning and mining, in which "large practical experience is necessary for the supervisor to estimate the working conditions and determine whether the quality and output of the work is satisfactory."
- (b) The "non-manipulative or operative industries", *e.g.*, the manufacture of sugar and chemicals and oil and rice milling, "where, on account of the automatic or semi-automatic character of the plant, or of the simplicity of the process, the necessary knowledge can be more quickly acquired".

The Industrial Commission pointed out that the first class of industries usually requires a training in industrial concerns, while in the second class, the only training that can be given is mainly technological, consisting, for example, of a course in industrial chemistry of a special type, together with some training in the handling of machinery and in the making of drawings. They added that although the student who intends to enter one of the non-manipulative industries will require practical experience this need not be obtained at a very early stage in his career.

*The Size of the Industrial Unit.*

22. It is characteristic of organised industry that it usually employs large groups of workers in each of its units of production. In India, these groups are, in some instances, *e.g.*, that of textiles, far larger than in Western countries, as is shown by the following table extracted from the report of the Royal Commission on Labour issued in 1931 (page 6).

Industries.					No. of factories.	Average daily number employed.
Cotton Spinning and Weaving	..	..	..	..	295	338,000
Jute Spinning and Weaving	..	..	..	..	95	347,000
Other textiles	..	..	..	..	68	11,000
Total Textiles					458	696,000
Engineering and Metal Works	..	..	..	..	871	315,000
Others (Non-textiles)	..	..	..	..	1,122	155,000
Grand total					2,451	1,166,000

From this table it appears that the average daily number of persons employed in a single factory of each group was in 1931 :—

Cotton spinning and weaving	..	..	..	..	..	1,145
Jute spinning and weaving	..	..	..	..	..	3,652
Other textiles	..	..	..	..	..	152
Engineering and Metal Trades	..	..	..	..	..	360
Others (non-textiles)	..	..	..	..	..	138
Average for all groups					..	476

*The grades of workers.*

23. In general there are three grades of workers in each industrial undertaking of any size. These are :—

- (a) The directing and managing grade.
- (b) The supervisory grade, that is, foreman, chargehands, etc.
- (c) The operative grade.

*The directing and managing grade.*

The number of persons in the directing and managing grade, in any industrial country, is small in comparison with the total number of persons employed.

In India, where, as we understand, the operative labour is usually less efficient than it is in Western Europe, the proportion of the directing grade is very small.

There is accordingly no great demand, in the present circumstances of organised industries in India, for an immediate and considerable increase in the facilities for the vocational education of the members of this group, important as they are. Many of them have been educated outside India, or have, at any rate, gained some of their experience abroad. This is inevitable, since the industries conducted on the large-scale have been introduced from other countries and are engaged in the conversion of Indian raw materials into saleable products by employing the same machinery and methods as are used overseas.

It is important, however, that India should, through her technical schools and universities, devote the most serious attention to the education and training of the members of the directing and managing class.

24. We have seen with great satisfaction the work in applied science and technology now being done under able direction by post-graduate students and others at the various universities in the Punjab, the United Provinces and Bombay, as well as by advanced students in such institutions as the MacLagan Engineering College at Lahore, the Harcourt-Butler Technological Institute at Cawnpore, the Lucknow Technical Institute, the Dyeing and Textile Schools at Benares and the Central Woodworking Institute at Bareilly. Much of the work done in these institutions reaches a high standard, and we believe that many of the young men who are now being trained in them will ultimately play an important part, as research workers, managers or directors of industrial undertakings, in the development of large-scale industries in India. So far as we are able to judge, there is no need to add to the number of institutions giving instruction in this grade in either the Punjab or the United Provinces, since practically all of them appear to be capable of expansion when the need arises.

#### *The supervisory grade.*

25. The supervising class is the one on whose education and training attention should be concentrated at this stage in the evolution of organised industry in India. It is this grade of workers, intermediate between the management and the operatives, which ought to have sufficient knowledge and intelligence to understand the instructions of the former and sufficient powers of expression to communicate and interpret them to the latter.

If engaged in the "manipulative" group of industries they should, in general, have such an acquaintance with the theoretical principles underlying workshop operations as to enable them to understand what the various machines are doing, and how the elements constituting the machines should be adjusted to the different kinds of raw material used or of product desired. At the same time, they should have sufficient practical skill to earn the respect and confidence of the operatives whose work they direct, control and supervise.

If, on the other hand, they are employed in the "non-manipulative" group of industries, they should have some knowledge of the theoretical principles underlying workshop practice, but manipulative skill is obviously less necessary.

The importance of the sound and adequate training of the supervisory group of workers cannot be over-estimated ; the foreman holds, in fact, the key to efficiency in production.

*The operative grade.*

26. The full-time vocational schools can, as a rule, do very little for the operative grade of workers, since these receive in the works itself what training is necessary for the proper performance of their duties. There are, however, exceptions to this general rule ; the men engaged in the maintenance of the mechanical plant of a works, *i.e.*, those entrusted with the care of engines, the repair of electrical and other equipment, the upkeep of the fabric of the building and similar duties, would derive benefit from a systematic training in the crafts they practise.

*The sub-division of all these grades.*

27. Although these three great divisions normally exist in any organised industry, and indeed in any individual undertaking of considerable size, they are frequently sub-divided into smaller groups. Thus in the management group, there are often not only general managers responsible for the direction and control of the whole of a great undertaking, but also departmental managers directing and supervising single departments ; in the supervisory group, there are men with larger and smaller responsibilities ; and in the operative group there may be skilled, semi-skilled and unskilled workers.

*The vertical mobility of labour.*

28. In spite of the division of the personnel of industry into the groups just described, we attach great importance to the existence of ample facilities for the promotion of individual workers to more responsible duties. No industry can possess the flexibility and the strength on which its successful conduct depends unless its directing and supervising groups are drawing life and energy from every available source. Moreover, it can never receive the same quality of service from its subordinate officers as it requires if every one of them knows that he has no prospect of advancement, whatever the efficiency of his work or the energy he devotes to it ; and when we speak of advancement, we have in mind not merely promotion within a particular grade but also from this to a higher grade. The maximum efficiency in an industrial undertaking can only be secured if there is reasonable and legitimate scope for ambitious men of diligence and ability to rise. There is no doubt that the "vertical mobility of labour" in British industry has been for more than a century one of the most potent factors in the increase of its efficiency. Every one who has even a slight acquaintance with business firms in Great Britain can at once recall instances of men who have entered upon their life's work in humble positions, with few advantages, and have built up successful businesses, or risen to positions of high responsibility in business through their industry, their ability, their good health and—it must be said—their good fortune. In this process in Great Britain education has often played a most important part. In urging, therefore, that a systematic scheme for the vocational training of the supervisory officers of industry and commerce should be formulated and put

into operation in India, we stress the importance of giving to such men every practicable opportunity for rising to higher grades.

29. Although we, following the Indian Industrial Commission, divide organised industry into 'manipulative' and 'non-manipulative' branches, we ought to add here that the grading of the personnel which has been described above occurs, broadly speaking, in both groups. We are conscious, however, of certain differences in the actual character of the education and practical experience needed by those engaged in the functions of management, and especially in that of supervision, in the two branches. We refer to this point in later sections of our Report (Sections 78 and 79).

### *Commerce.*

30. When we examine the forms of activity which are collectively known as 'commerce' it is obvious that they are almost as diverse in character as are those of productive industry, and that they include the conduct of operations differing as much in magnitude as, for example, do those of a shoe-maker working on his own account and those of a great textile or engineering firm employing thousands of workers, or of a great merchanting firm.

Whatever its character, and whatever its scale, every commercial operation is, however, related directly or indirectly to the primary function of trading, that is, of buying and selling. There is nothing in commerce which is not ultimately concerned with this. Associated with trading there have grown up in the course of time other functions ancillary to it—banking, accountancy, insurance, the practice of commercial law and secretarial work—each of them carried on by men of professional attainments and standing.

### *Main divisions of workers in Commerce.*

31. The great merchants, the industrialists carrying on transactions on a large scale, seeking their raw materials over a wide field and selling their finished goods in the most distant markets, as well as the men engaged on the professional side of commerce, constitute, however, but a comparatively small proportion of the total number of persons earning a livelihood through work in commerce. They are engaged in initiating and carrying to a successful issue business transactions; but, side by side with them, serving them and carrying out their instructions, there is a vast army of clerks, who are engaged in the humbler, but necessary, task of recording accurately and faithfully the details of transactions carried out by others.

## CHAPTER IV.

### CO-OPERATION BETWEEN BUSINESS AND EDUCATION.

#### *In the Planning of Vocational Education.*

32. Reference has been made in an earlier section of this Report (Section 13) to the necessity of vocational education being regarded and treated as the joint concern of education and of industry and commerce. Without the close

and regular co-operation of these two interests, the contribution made by Indians educated in their own country towards the expansion of large-scale industry will be far less than is desirable.

The problem of devising means for securing this co-operation is not new. It has confronted every country which has created great industries, and the more nearly it has approached complete solution, the more economically and effectively has vocational education been provided.

33. In Great Britain and elsewhere, the evolution of large-scale industry called into existence federations of employers, trade unions, chambers of commerce, professional institutions and other associations of men engaged in either industry or commerce. While these were originally formed for purposes other than that of encouraging education, yet a number of them are greatly concerned with raising the standards of attainment in the branch of business in which they are interested : and their activities are increasing.

Similarly, there have existed for a generation in Great Britain not only the Board of Education, which is the central Government Department concerned with Education, but strong Local Education Authorities established by statute.

Accordingly, when the need for closer co-operation between business and education became manifest, there were already organisations representative of both, and all that was necessary was to bring these into proper relations with one another.

34. At the present time, the Board of Education is co-operating—usually through the services of its inspectors—with such national bodies, for example, as the Federation of Boot and Shoe Manufacturers, the Institution of Mechanical Engineers and the City and Guilds of London Institute, in the drafting and continuous revision of schemes of instruction in the many subjects included in vocational education as a whole.

Similarly, local Associations of business men, *e.g.*, the Manchester Chamber of Commerce, co-operate with the Local Education Authority in whose area they exercise their own activities.

This co-operation is generally of recent growth, but it is becoming daily more fruitful.

35. In view of the conditions in India, it is doubtful whether the collaboration which exists in England between the interests concerned respectively with education and business can for some time be established on a sufficiently wide scale, for the strong and stable organisations on which reliance is placed in England have not, as yet, been established so widely. We have thought it worth while, however, to describe briefly how co-operation for educational purposes has developed in England, since it is possible that the conditions for successful co-operation may ultimately exist in India.

36. The formation of large national associations of farmers and of small industrialists is difficult even in countries with far better means of communication than India. The need for the co-operation of agriculture and small scale industry with education is, however, just as urgent as in the case of organised industries carried on on the large scale.



37. As regards commerce, there appears to be little immediate prospect of the establishment of powerful provincial or national organisations, representing its various phases, which can play an important part in the development of vocational education.

*An Advisory Council for Vocational Education.*

38. We believe that the solution of the problem of securing the co-operation of industry and commerce with education lies in the establishment by the Department of Education in each Province of an "Advisory Committee for Vocational Education", which would be properly representative both of industry and commerce and of education. In each Province, it would necessarily include the Director of Public Instruction, the Director of Industries, two or three principals of important vocational schools, and four or five business men selected and appointed by the Provincial Government itself, not as representing interests, but on account of their knowledge and experience of particular branches of industry and commerce and their willingness to contribute to the solution of the problems confronting the Department of Education.

This Council, as its name implies, would have advisory powers only. It need not be large, since it would entrust most of its detailed work to appropriate Advisory Sub-Committees, each dealing with one of the main branches of industrial or commercial education, and reporting to it. Necessarily, these Sub-Committees would consist of members nominated by the Council and possessing the same kind of educational or business qualifications as the members of the Council itself.

*The Chief Advisory Sub-Committees.*

39. There would necessarily be Advisory Sub-Committees dealing respectively with education for—

- (a) Engineering.
- (b) The Textile industries.
- (c) Agriculture.
- (d) Small-scale and cottage industries.
- (e) Other industries of major importance.
- (f) Commerce.

It is of special importance that the Advisory Sub-Committees concerned with the textile and the small-scale industries should include representatives with the knowledge needed to advise on the application to them of art.

*The Functions of Advisory Sub-Committees.*

40. The main functions of the Sub-Committees would be to draft curricula and syllabuses of instruction, to advise as to the equipment needed for carrying these out effectively, to suggest where schools should be set up, to visit the schools regularly and in general to do everything in their power to ensure that the branch of vocational education in which they are specially concerned is really successful.

As regards the curricula and syllabuses, a great wealth of material of this kind exists in Great Britain, as well as in other European countries, and this could be made available for use in India. We do not suggest that either the curricula or the syllabuses used in other countries should necessarily be adopted as they stand ; but they are the result of many years of experience, and would undoubtedly serve as a useful basis of discussion when instruction specially suitable to Indian conditions and needs is being planned.

41. It is important to emphasise the fact that in any Advisory Sub-Committee of the kind we have described, the representatives of business and of education do not perform exactly the same function when schemes of instruction are being drawn up. Each party brings into the common pool a contribution based on its own special knowledge and experience. Essentially, the procedure is as follows :—

- (a) Industry and trade define their educational needs as precisely as possible, that is, they prepare a specification stating the attainments and the qualities which they wish their recruits to have. Obviously, in a new scheme, they would be performing a most useful service if they were able to give a quantitative estimate of the annual intake into business of suitably qualified recruits within the area with which they are concerned. This involves, in fact, the kind of industrial survey, with a limited objective only, to which we referred in an earlier section of this Report (Section 5).
- (b) The representatives of education examine the specification in order to ascertain whether it is one which it is proper and practicable for the schools to satisfy. If they are convinced that it is, they proceed to draft suitable curricula and syllabuses.
- (c) These are considered by the full Advisory Sub-Committee and, when agreement is reached, submitted for approval to the Advisory Council itself and then put into operation.

Although this is the essential method of procedure, its various stages are not usually so clearly articulated as our description suggests. In many instances within our knowledge, an individual representative of education who has himself had experience of industry or commerce drafts curricula and syllabuses which are submitted to the full Sub-Committee almost at its first meeting and become the subject of discussion.

42. We have stressed the importance of industry and commerce taking an active part in planning schemes of instruction which shall fulfil the reasonable requirements of business and shall not provide many more recruits than business can readily absorb. If industry and commerce would systematically and earnestly perform their part, they would be doing an inestimable service at a time when it has become evident that vocational education must be provided on a larger scale if the prosperity of India is to be enhanced.

*Other Methods of Co-operation between Business and Education.*

43. Although businessmen and their organisations can give most valuable help in the planning of vocational education, there are other methods open to

them of assisting in its development. It is quite clear that its expansion cannot be brought about without incurring additional expenditure, since this involves the adaptation of buildings, the provision of special equipment and of raw materials, the re-adjustment of some parts of the machinery of administration and the training of suitable teachers. Progress towards rendering the system of vocational education in India fully adequate to her needs may, for this reason, be slow, though we hope that it will, as soon as possible, be made sufficient for her more pressing requirements, and completed within a specified period. This process can be accelerated considerably by the material assistance of large employers, which is freely given in some countries, notably England, France and Holland, although it is by no means confined to these. We are encouraged to think that similar assistance, although possibly on a smaller scale, would be forthcoming in India also, if the outstanding need for an increase in the volume and standard of technical education were generally realised, and if the firms concerned were convinced that their contributions would yield valuable results. We have been impressed during our visits to Indian schools giving a general education by the generous support they frequently received from voluntary contributors interested in their work, and we hope that equally generous support would be available for this form of education also.

44. The assistance given by benevolent employers takes various forms. In England, France and Holland, to mention three countries with whose provision of technical education we are well acquainted, a number of firms conduct schools for their apprentices on their own premises, providing accommodation, equipment and the services of competent teachers. While part of the cost is defrayed from public funds, the remainder is found by the firms themselves.

45. In some instances, the premises of technical schools in important centres of industry in England have been built at the cost of employers. Thus, the Technical Schools at Chesterfield and Middlesbrough were erected, in one instance by an individual and in the other by a single family, at a total cost of considerably more than £100,000, while about the same total sum was contributed by a number of local employers towards the cost of extending the important technical school at Huddersfield and Manchester.

46. Industry is assisting technical education in England by gifts to the schools of equipment and materials also. There is no recent information available as to the total annual value of contributions of this kind, but during the three years ending March, 1925, it amounted to more than £40,000 in each year. There is no reason to suppose that it has diminished since that time, and the fact that the number of technical schools benefiting from the donations was as many as 92 indicates that the willingness to encourage this type of education by voluntary gifts was wide-spread.

47. The help given by business to vocational education is most considerable in France, where indeed it is not voluntary but compulsory. Every employer who pays more than 10,000 francs (i.e., about Rs. 1,300) a year in wages is bound by law either to pay a special tax (the "taxe d'apprentissage") of two francs for every thousand francs of the wages he pays, or to shew that he is entitled to be excused from the whole or part of this tax because he is already

contributing in other approved ways to the proper education of the young persons in his employ. One firm, which was exempted altogether from the payment of the tax, satisfied the authorities that it was already spending on the training of its apprentices four times the sum which would otherwise have been due from it. The total yield of the tax in a recent year, after all the proper exemptions had been made, was 160 million francs (worth at that time nearly three crores of rupees), and this was devoted to vocational education and related purposes.

Necessarily, certain administrative machinery exists for ensuring that the tax is not improperly evaded, but so far as we can learn from enquiries made during visits to France, this plan of raising funds for the development of technical education in that country is working smoothly.

47. We realise that in making comments on the finance of technical education, we may be considered to be going outside our province; but we feel bound to call attention to the fact that it is not by any means a cheap form of education, and at the same time to describe how the burden falling on the general taxpayer is being lightened in several countries of Western Europe by the active support of employers. Many employers who give this support dislike being looked upon as philanthropists, and say frankly that they regard it as constituting a valuable investment, since it helps them to prevent loss of money through the ignorance or lack of training of their employees. If only the same kind of support were available in India from industry and trade, the development of vocational education would be hastened and the consequent growth of profitable industry would be fostered.

## CHAPTER V.

### THE ORGANISATION OF VOCATIONAL EDUCATION.

48. The structure of the system of vocational education is necessarily complex, since it has to take into account the training needed by the innumerable types and grades of the workers engaged in industry and commerce. This training may be intended for pupils whose employment has not yet begun; or it may be organised for those who have already entered upon their work in life. In the former case, it will normally be provided in schools involving full-time attendance, while in the latter it will be given in schools requiring only the part-time attendance of their pupils. Again, it may be elementary or advanced; and its degree of specialisation may be small or great.

These considerations suggest that we should give a brief analysis of the structure of vocational education before proceeding to discuss these forms which appear appropriate to Indian conditions.

#### *Means of Classification.*

49. Some means of classifying the schools must be sought and the most convenient are afforded by a consideration of two cardinal factors:—

- (a) The standard of admission to each school.
- (b) The precise vocational aim of the instruction it provides.

*The Standards of Admission to Vocational Schools.*

50. We have considered carefully the question of the standards of admission to schools with a vocational aim, and in this connection, two matters appear to us to be of fundamental importance. In the first place, nothing is more certain than that a satisfactory vocational education must be based on an adequate general education; we regard this as axiomatic. In the second place, it is most undesirable to commit a child to a particular career until he is old enough for his inclinations and his aptitudes to have been ascertained.

51. We recommend therefore that the entrance standard to a vocational school shall not, as a rule, be lower than that attained at the end of the Middle School (Class VIII). A pupil who has reached this stage is ready for transfer to the lower type of vocational school, which we suggest shall be known as the "*Junior Vocational School*".

52. The next break in the system of general education will come, under the proposed scheme of reconstruction, at the end of the Higher Secondary School (Class XI). Pupils who have successfully completed their studies up to this point may be transferred to a higher type of vocational school, which is conveniently termed the "*Senior Vocational School*".

53. We regard it as important that there shall be a suitable test of fitness to benefit by the instruction given in both these grades of school, and accordingly we welcome the proposal that a "*First Public Examination*" shall be instituted for children who complete the ordinary course in the Middle School, and we recommend that the passing of this examination shall be made the normal condition of admission to "*Junior Vocational Schools*". This applies to both full-time and part-time schools.

54. As regards the "*Senior Vocational School*", there are already in existence the matriculation examinations of the various universities, and the possession of a matriculation certificate (or its equivalent) should, in general, be required of candidates for admission to this grade of school, although exceptions should be made in the case of young men who are able to produce satisfactory evidence of their fitness to benefit by the teaching given. Even in these instances, however, admission should be conditional on their having passed the *First Public Examination* and subsequently pursued some form of study.

*Schools involving Full-time Attendance.*

55. An analysis of the functions of full-time vocational schools indicates that they fall into three possible types:—

- (a) Those which impart to their curricula during the last year or two of school life a definite bias towards preparing their pupils for work in industry or commerce. This bias is usually slight, and is not related specifically to any one branch of industry or trade. The educational foundation of the instruction remains broad, since the object is not so much to give technical skill as to make the transition of the pupil from school to employ-

ment less abrupt. The bias is given by looking at old subjects from a fresh angle, as well as by introducing new subjects into the curriculum. An example of the different treatment of old subjects occurs in the teaching of history and geography. In the former, increased attention is paid to modern history and to the great changes which have marked the course of the last half century; in the latter, physical geography tends to be replaced by commercial geography. A new subject which is sometimes brought into the curriculum is an elementary study of the principles of accounts or of statistics. The school does not become a technical school, but remains a place of general education.

A few of the secondary schools in England are now developing a commercial bias in their teaching, sometimes before the age of sixteen and occasionally between the ages of sixteen and eighteen for those pupils who have passed the "School Certificate" examination, and are staying at school for a period before entering employment. A bias in the direction of industrial employment is rare in schools of this grade, as it is rightly thought that the ordinary instruction in mathematics, physics and chemistry forms a suitable basis for the later study of technological subjects.

A bias towards the needs of industry or commerce is frequent in the English "Central Elementary Schools", whose pupils normally leave school soon after reaching the age of fifteen.

- (b) (i) The schools which afford a preparation for employment in an occupation to be selected at the end of the school course from a range of those included either in a group of related industries, e.g., the constructive industries of engineering or building, or in a single highly organised industry. These schools are known in England as "Junior" or "Senior" Technical Schools according to their grade.

The Junior Technical Schools do not appear to have any exact analogues outside England, and even there they are not numerous, as they have only about 25,000 pupils in attendance. They enjoy, however, a deservedly high reputation, and their number is likely to increase. It should be emphasised that the Junior Technical School is a pre-apprenticeship school and does not profess to teach a skilled trade; all that it aims at doing is to lay a solid foundation for the future industrial experience and for the more advanced theoretical studies which the more able and ambitious of its pupils may desire to undertake.

As this type and grade of school appears to us suitable for meeting many of the educational requirements of organised industry in India, it is discussed more fully in a later chapter of this Report.

The Senior Technical School, receiving pupils of longer general education, prepares them for entrance to employment in a

grade demanding better initial qualifications than those possessed by pupils leaving Junior Technical Schools.

- (ii) Parallel with the Senior Technical Schools just described are the Senior Commercial Schools whose aims, *mutatis mutandis*, are very similar to theirs. They resemble the Technical Schools in that they do not usually prepare their pupils for one specified occupation in commerce, but aim at giving him such a preliminary knowledge of the methods of commerce as will enable him to take up the particular task which either attracts him, or is available for him, when he enters employment.
- (c) The schools which train their pupils specifically for entrance to a single occupation, *e.g.*, carpentry or bookbinding. These schools exist in large numbers in France and other European countries, but are somewhat rare in England, where they are called "Trade Schools". They differ fundamentally from the Junior Technical Schools, in that they are *schools of apprenticeship*, which provide real trade experience. They are, in fact, comparable with the "Industrial Schools" which have been established in India, although they usually devote more time to the continuance of the general education of their pupils than is usual in India. We ought to add that while we are of opinion that ultimately the entrance standard to this type of school should be just the same as that prescribed for the Junior Technical School, we realise that it may be necessary as a temporary measure to accept pupils with a somewhat lower qualification. This question is discussed in a later section of this Report.

#### *Schools with a vocational bias.*

56. While all these types of vocational schools exist, they are not necessarily suitable for adoption everywhere. The first type mentioned, which has no more than a vocational bias, can only be developed successfully after the system of general education has become stabilised, since it is a variant of a normal type of school. At the present time, it is proposed that the educational system of India shall undergo considerable modification, and until this process is approaching completion, it would, in our opinion, be unwise to confuse matters by attempting to change any part of the unfinished structure. As soon as the new system has been organised, and the public are acquainted with the precise functions of the constituent schools, the possibility of imparting a vocational bias to the teaching given in some of the High Schools should be carefully considered.

57. What has just been said does not apply to the education of those who intend to engage in the practice of agriculture. Schools with a rural bias already exist in India, and we have noted with great interest their organisation and methods, as well as some excellent schemes for training teachers for work in them. We believe that schools of this type should be established even more widely than at present, as we have far greater belief in their value

than we have in that of schools for boys which purport to teach the "subject" of agriculture.

### *The Junior Vocational School.*

58. In the proposed new framework in which the educational system of India is to be organised, the Junior Vocational School would be parallel to the Higher Secondary School, that is, it would admit its pupils at the end of the Middle or Lower Secondary School and retain them, as a rule for three years (Classes IX, X, and XI). Just as pupils in Higher Secondary Schools will enter for a leaving examination, so it is hoped that arrangements will be made for pupils in Junior Vocational Schools to enter for an appropriate examination at the end of their course, and that the certificates awarded to them will enjoy the same repute as is now enjoyed by matriculation certificates. The question of the method of awarding certificates to pupils who are educated in vocational schools is dealt with in a later section of this Report (Section 68).

59. As the Junior Vocational Schools would have to prepare pupils for a variety of careers, they would have to assume a number of forms, each differing from the others in accordance with its vocational aim. As a rule, the first two years of the course would be to a great extent common to pupils preparing for somewhat diverse employments, while the third year would be specialised in accordance with the needs of particular forms of employment.

### *The Senior Vocational School.*

60. Some recruits to industry and commerce, as well as to certain professional occupations, enter upon their specialised work at comparatively late ages, and it is for these that the Senior Vocational Schools can provide a suitable training. Like the Junior Vocational Schools, they should refrain from attempting to give an apprenticeship course, this task being left to the existing "Industrial Schools" carried on in various Provinces. The functions of the Senior Vocational Schools is to lay down for their pupils that firm foundation on which apprenticeship (or its equivalent—professional "pupilage") can be built, and not to serve as substitutes for workshop or office experience.

61. If a student entering a Senior Vocational School is to follow with profit a scientific or technological course, he must have acquitted himself with credit in the subjects of mathematics, physics and chemistry at the Higher Secondary School, while if he proposes to devote himself to the study of commercial subjects, he ought to produce evidence of his satisfactory study of, at least, geography, history and English. In other words, the student entering a Senior Vocational School must already have made some progress in subjects which have an organic relationship with the subjects of the course which he proposes to follow. Strict adherence to a rule of this kind will prevent waste of time and money by both the students and the authorities maintaining the school.

62. The question naturally arises whether a pupil who has obtained the "leaving certificate" of a Junior Vocational School should be admitted to a Senior School. We regard the Junior Vocational course as leading directly



either to employment or to further training in an Industrial School, and not as normally forming a basis for more advanced scientific study. We believe therefore that few students who have completed this course ought to continue their pre-apprenticeship education in a full-time school. At the same time, we do not think that there should be any bar to this procedure, so long as good reason is shewn, and we are of opinion that where it is adopted, the leaving certificate of the Junior Vocational School should carry exactly the same weight for this purpose as the matriculation certificate normally required of a candidate.

63. In making these recommendations relating to Senior Vocational Schools, we realise that the total number of students joining those of the industrial type would probably be small, not only when they were first established, but permanently, since the proportion of men holding high posts in industry is small in comparison with the number of men holding lower posts. We are convinced, however, that the necessity for them exists, since no country which is engaged in the attempt to utilise more fully its natural resources and to expand its markets can afford to rely for the most part on a personnel whose formal education (whether general or technical) has ended at the age of sixteen or seventeen. It is true that we contemplate that the universities will make a larger contribution to the staffing of industrial and commercial concerns. We look forward too, to an increase in the proportion of men arising through a process of natural selection to higher posts, and indeed to posts carrying the highest responsibilities. But this is not sufficient. The conditions of India demand that her industries shall have the services of men who, while not having had the advantages of a university education, have received a prolonged general education before entering upon specialised studies in the Senior Vocational Schools.

64. The Senior Vocational School would, like the corresponding Junior School, include several sub-types, each preparatory to a different career. It should, as a rule, provide a two year course (Classes XII and XIII), but for certain forms of study it should be planned to cover three years. It is improbable that many pupils would leave before completing the full course laid down; their parents have already committed themselves to continuing the education of their sons up to the end of the Higher Secondary School and will not usually be inclined to break it off before it is completed.

#### *Part-time Schools.*

65. In every industrial and trading country, there are large numbers of young men already engaged in business who have the natural ambition either to improve their qualifications for the duties they are performing, or to gain fresh knowledge and skill in order that they may obtain promotion. While their aims may be accomplished in some degree by private study, especially if they have suitable guidance as to their reading, there is no doubt that their ambitions will be more easily and fully satisfied if they have facilities for attending properly equipped schools, where good teaching is available. Since the ordinary work of an employee occupies him all day, the only opportunities he has for attending school are in the evening, unless he is released by his employer for some period during the day time. Accordingly, most

industrial countries have established systems of part-time education for persons already employed. In Great Britain, by far the great volume of technical and commercial education is given in evening Technical and Commercial Schools, although the release of deserving young men for day-time instruction is increasing. In Czechoslovakia, all employers are bound by law to afford facilities for their younger employees to attend school during working hours; and other instances could be quoted of the prevalence of recruits to industry being set free during the day time for attendance at school. There is no doubt that this form of instruction for employed persons is far more effective than that provided in evening classes, when the pupil is tired out and his mind is no longer fresh.

We have learned with great satisfaction that some, at any rate, of the railway employees in India are allowed to attend classes during working hours, and we hope that this practice will become more frequent in India.

66. We reserve the detailed discussion of the aims, organisation and functions of different types of vocational school for a later chapter of this Report.

### *Examination in Vocational Schools.*

67. *Entrance Examinations.*—Pupils admitted to vocational schools will already have passed a qualifying examination at the end of their general education, and this should be regarded as entitling them to admission to the appropriate grade of school unless it happens that there are more candidates for admission than vacancies. In this case, it will be necessary to hold a special entrance examination in the subjects they have already studied. It is suggested that this should include an oral test conducted by the principal of the vocational school which might be carried out in the presence of any members of the school committee who cared to attend.

It is hoped that at the start of the vocational schools, there will be a few more candidates for admission than can be accepted. This would have the advantage of giving some freedom of choice amongst the candidates. It would have the further advantage that the parents of the successful applicants would regard the admission of their sons as something of an achievement, and this would undoubtedly add to the prestige of the school.

68. *Leaving Examinations.*—It is important that pupils leaving vocational schools shall be awarded certificates indicating (i) that they are capable and diligent students, and (ii) that they have reached a minimum standard of knowledge and skill.

We are strongly of opinion that it is essential to record on the certificates not merely the performance of the students in the leaving examination, but also the quality of their work during the whole of their course. Accordingly,

each student should have a book (kept by the principal) in which are recorded regularly :—

- (a) his percentage of attendance,
- (b) his marks for each subject of class-room instruction (calculated weekly),
- (c) his marks for each subject of laboratory instruction (calculated weekly),
- (d) his marks for homework (calculated weekly),
- (e) any other significant marks.

69. Briefly, the certificate should indicate concisely not only the performance of the pupils on the days of the final examination, but also the way in which he has conducted himself during his whole career as a pupil in the school. No certificate should be issued to any pupil whose record of work done is not completely satisfactory.

Completely external examinations are probably essential at the start of any scheme in order that proper standards may be reached and maintained. In the course of time, when standards have become firmly established, the teachers of the school may take some part in examining; the external element should, however, never be absent, since its presence tends to retain public confidence in the results.

#### *The Administration of Vocational Education.*

70. There is no doubt that the system of vocational education is so closely related to that of general education that it should be under the same administration and control. We recommend therefore that it should be administered by the Department of Education in each Province, although, for reasons given in Chapter VIII, we regard it as more convenient for the present that the Industrial Schools now in existence shall be administered by the Department of Industries.

Since the task of organising vocational education is new to the Departments of Education, and the schools will be for some time in an experimental stage, we are strongly of opinion that the vocational schools to be established shall be maintained by the Governments themselves, and not by voluntary organisations aided by grants. When the schools have reached stability and have an assured place in the educational system, the question of entrusting the responsibility for them to other bodies should be reconsidered.

### CHAPTER VI.

#### EDUCATION FOR INDUSTRY IN VOCATIONAL SCHOOLS.

71. We have already discussed in Chapter III the characteristics of industry and commerce which are relevant to our inquiry; and we have described in Chapter V the general features of the vocational schools which we believe to be suitable for meeting the educational needs of boys and young men who propose to follow industrial or commercial careers. Our present

task is to consider broadly how the schools we have described can be used with advantage both to industry itself and to those engaged in it. The discussion of education for commerce we leave to a later chapter.

It will be convenient if we deal separately with the schools preparing for work in agriculture, the small scale industries, and organised industries respectively.

### *Education for Agricultural Employment.*

72. Education for rural life, like rural life itself, stands apart from other activities. It is true that it includes the same elements as do other branches of vocational education, but it is built on a different foundation of experience. It is quite possible for a youth to defer his choice of a career until he has passed through the Higher Secondary School, and afterwards to become a successful engineer, or chemist or doctor; but if he is to become a successful cultivator, he will, as a rule, have made his decision far earlier than this, as so much depends on his having lived in a rural environment during his early life. The cultivator is usually in intimate contact with the land from his birth until his death; his work is indeed his way of life. When he begins to study, he brings to his task a vast store of experience and of knowledge gained insensibly during his childhood. What he has to do is to seek explanations of what he already knows, to widen and systematize his knowledge of rural matters, and to learn how to apply this new knowledge to his own practice.

Taking into consideration these facts, and the further circumstance that agriculture is from its very nature carried on by a widely scattered population, we are of opinion that the most suitable form of vocational education for those who are engaged in it is not of the vocational type, given in schools separated from the schools of general education. It is true that for other industries we regard this separation as desirable, but the conditions and nature of rural education demand, we believe, very special treatment.

73. In earlier sections of this Report, we have suggested that the Rural Middle School should have a bias towards training for agricultural pursuits: what is needed, in our view, is that in each province certain of these schools, situated in suitable centres, should be selected and their course of instruction prolonged by the addition to it of two or three years, thus creating a limited number of Higher Secondary Schools with a specific agricultural bias. We do not think that there should be any clear line of division between the course in the Rural Middle School and that in the Higher Secondary School following it, but rather that the bias which already exists should be strengthened.

### *Education for Small-scale Industries and Occupations.*

74. The small-scale industries and occupations are all engaged either in the making of goods or the rendering of services, and these two aspects of the matter demand separate consideration.

The making of goods on the small scale is frequently carried on by handicraftsmen, and the training of these is discussed in a later section of this Report (Section 127), which describes the organization of "Trade Schools".

Many of the services rendered by men working on their own account, or employing a very small number of workers, are concerned with the erection, equipment and repair of houses and other buildings; and the maintenance and repair of machines, farm implements, motor vehicles and electrical equipment.

In Western Europe, Junior Vocational Schools exist for the training of the personnel to be employed in each one of these services. It is doubtful whether the conditions in India are yet suitable for the establishment of schools concerned with all of them. Two of them are, however, of special importance even at the present time, namely, the maintenance and repair of machines of various kinds, and the electric wiring of buildings. Since both small-scale and large-scale industries make use of men capable of doing work of this kind, the discussion of the vocational schools for training them is postponed to the succeeding sections of this chapter in which the educational provision for organised industries is described.

75. There are certain professional occupations which are carried on by individuals, which demand a high degree of previous education before specialisation begins. Amongst these is the practice of pharmacy, for which a vocational education is appropriate. We understand, however, that little progress can be made with the improvement of pharmaceutical education until the practice of pharmacy is confined, as it is in many other countries, to persons holding approved certificates.

#### *Education for Organised Large-scale Industry.*

76. We have already indicated in another section of the Report (Section 23) our opinion that the number of openings for boys aiming at reaching very high positions in organised industry is small; and we have pointed out that there are already in existence in both the Punjab and the United Provinces institutions which meet quite adequately the present demand for industrial recruits of this grade, and are, moreover, capable of expansion if increased demands are made on them. The pressing need of organised industry in India is not for any considerable addition to the supply of highly trained men looking for managerial posts after having had some experience of industry, but for better trained foremen.

The main question before us, therefore, is whether it is desirable for the Government of the Provinces we have visited to establish fresh types of vocational schools for the purpose of training boys who, if they possess the personal qualities needed, will ultimately arrive at the grade of foreman and will, in any case, be skilled craftsmen; and, if the reply to this question is in the affirmative, what form should these schools assume.

77. An answer to these questions involves a consideration of the following facts:—

- (a) A foreman ought to be thoroughly at home in the atmosphere of the workshop; and, in that group of industries which the Indian Industrial Commission termed “manipulative” (Section 21), he should be capable of demonstrating to a workman, if necessary, how a skilled operation should be performed.

- (b) Familiarity with the works atmosphere and ability to perform manual operations skilfully and quickly are best gained at an age below eighteen.
- (c) There are already in existence in the Provinces a number of technical and industrial schools which devote a great deal of attention to instruction in workshop practice.

78. In view of these facts, we are not prepared to recommend the establishment of Senior Vocational Schools, with a high age of entrance, for training boys to become foremen in works engaged in the "manipulative group" of industries. These, it will be remembered [Section 21 (a)], include certain branches of mechanical engineering, the pottery and glass industries, textiles and mining, in which, as the Industrial Commission pointed out, "large practical experience is necessary for the supervisor to estimate the working conditions and determine whether the quality and output of the work is satisfactory".

Boys who are to enter industries belonging to this group with the intention of becoming either skilled workmen or foremen, ought to enter not later than the age of sixteen or seventeen if they are to achieve their aims. To postpone entrance to these industries to a later age is to run the risk of being too "set" for complete success.

We recommend accordingly that the normal method of training for this grade of work in the "manipulative group" of industries should be that provided by the Junior Vocational School.

79. As regards the "non-manipulative group of industries", e.g., the manufacture of sugar and of chemicals, and oil and rice milling, we are in agreement with the view of the Industrial Commission that "on account of the automatic or semi-automatic character of the plant, or of the simplicity of the process, the necessary knowledge can be more quickly acquired". The Commission expressed the view that the only training that can be given for the non-manipulative group is "mainly technological, consisting, for example, of a course in industrial chemistry of a special type, together with some training in the handling of machinery and in the making of drawings". They added that although the student who intends to enter one of these industries will require practical experience, this need not be obtained at a very early stage in his career.

These facts indicate the desirability of establishing in suitable centres Senior Vocational Schools preparatory to work in supervisory positions in the industries belonging to this group.

We deal later (Chapter XI) with the setting up of a Printing School belonging to this grade.

#### *The Junior Technical School.*

80. The main type of Junior Vocational School which we recommend is the "Junior Technical School", which aims at giving a boy such a realistic pre-apprenticeship education that when he enters a branch of industry in which machinery is made or used, or indeed almost any branch dependent on the application of science to industrial practice, he rapidly becomes a

skilful and reliable workman. It does not make him into a skilled workman, but it undoubtedly imparts to him the knowledge and skill on which his training as a workman can properly be based. Wherever this type of school has been established in England, it has been conspicuously successful in the accomplishment of its aims. The Committee on Education and Industry, for example, reporting in 1928, said: "We have heard very warm praise of the work of the Junior Technical Schools which, although they are a comparatively recent creation, have won the approval of employers and educationists alike".

81. It was originally planned to give a preliminary education suitable for boys who are to be skilled workmen. But it has done more than this, for many of the former pupils of Junior Technical Schools, who have continued their studies in part-time technical classes, are occupying responsible posts in industry as foremen, draughtsmen and, in some instances, as managers. It should be added that we know of pupils who have successfully completed the course of instruction in a Junior Technical School adopting careers quite different from those for which they have been prepared, and filling them with distinction, not only because of the special knowledge they have gained, but also on account of the attitude towards work they have acquired and the habits of diligence, exactness and self-reliance they have developed.

82. Although this type of school is peculiar to England and Wales and has few, if any, analogues either in other parts of Great Britain or in any of the continental countries we have visited, we believe that its establishment in India would be of great advantage to this country also. We are strengthened in this belief by the opinion of the responsible officers, both Indian and European, of great industrial undertakings in India with whom we have discussed the question of the future of vocational education here. All of them are of opinion that the skill of the rank and file workers in organised industry ought to be increased and that this is impossible unless the educational system includes means of training skilled artisans, from whom a proportion, who possess the necessary personal qualities, can be selected for work as foremen, charge hands, tool makers and the like.

83. The improvement of the qualifications of the foremen and charge hands appears to us to be the great need of a country which aims at increasing the volume of large-scale industry inside its boundaries. Accordingly we attach very great importance to the replacement of some of the High School courses in the Provinces we have visited, by well-planned instruction of the Junior Technical School type. This should not, however, be undertaken in a haphazard way. Before a school of this kind can be established and successfully carried on in any area, a survey of the needs of the local industries must be made in order to learn how many pupils of the school they can absorb each year; and it is desirable that the employers in these industries should be asked, at any rate in the earlier years of the existence of the school, to undertake to recruit annually a specified number of those pupils who complete the course satisfactorily. When the school has been in existence for some time and has acquired stability, we do not think that any such undertaking will be necessary, as in our opinion, its old pupils will have given such a good account of themselves that boys with similar training will be accepted in preference to others.

84. Junior Technical Schools are appropriate in industrial centres only, and it will be unwise to establish them unless the areas from which they draw their pupils have a population of at least 50,000. The corresponding figure in England is about 30,000, but it has to be remembered that that country is far more industrialised than India.

#### *The Age of Admission.*

85. It is important that the Junior Technical School shall not be regarded as an institution for boys who have not the ability for following the High School course successfully, and for this reason we think it desirable to prescribe an entrance age which does not exceed  $15\frac{1}{2}$  on the first day of the school year. As the schools gain experience and become generally recognised as constituting an essential part of the educational system, we recommend that the age of admission shall be lowered until it does not exceed  $14\frac{1}{2}$ .

#### *The Curriculum.*

86. Before describing the curriculum of the Junior Technical School, it is necessary to set out broadly what kind and degree of knowledge will be of use to a boy when he enters the workshop, whatever the nature of the organised industry or the particular occupation he chooses. The chief factors to be considered are :—

- (a) Every skilled workman is the better for having the ability to perform workshop calculations. The value of this needs no argument.
- (b) He should have a sound knowledge of, at any rate, the elementary scientific principles underlying workshop practice, that is, of the elements of mechanics, of heat and of electricity: he should have, in addition, an acquaintance with the phenomena of combustion and the properties of water.
- (c) He should understand “the language of the engineer”, that is, he should be familiar with the principles of geometrical projection and be able to “read a drawing”. If he can also make dimensioned hand sketches of simple machine details, this will be of considerable advantage to him throughout his career.
- (d) Skill of hand and accuracy of workmanship are of the greatest importance to every workman, whatever his occupation, and this can best be obtained by practical experience in the school workshop and in the laboratory. We understand that in India the habit of working to very fine measurements is comparatively new and is not yet widespread. For this reason, the future workman should become accustomed, from the very outset of his vocational training, to working to measurements as exact as the nature of the material and the character of the task permit or demand: this point should be borne continuously in mind both in the workshop and in the laboratory.



The skilled workman should possess an intimate acquaintance with the working qualities of the various materials which he uses, and this can be begun through guided experience in the school workshop.

- (c) Finally, every one, both in industry and outside it, should be able to express his thoughts readily and clearly, both orally and in writing: in addition, he should be able to understand and transmit instructions given to him either by word of mouth, or in writing, or, as is suggested above, in the form of dimensioned drawings.

87. Having all these factors in mind, it is now possible to decide upon the following approximate allocation of time to the various subjects of the curriculum of the Junior Technical School during the first two years of the course. They are as follows:—

Subject.	Approximate number of hours instruction each week.					
Mathematics	..	..	..	..	..	5
Science	..	..	..	..	..	5
Technical Drawing	..	..	..	..	..	5
Workshop Practice	..	..	..	..	..	5
Language (English)	..	..	..	..	..	5
Other Subjects	..	..	..	..	..	5
Total	..	..	..	..	..	30

The subjects unspecified in this list ought certainly to include physical training and might include art also.

Details of the syllabus in each of the main subjects of the curriculum, which are those actually followed in a typical Junior Technical School, in England are given in Appendix I. Little comment on these is needed, as they are self-explanatory. It should be stated, however, that in our opinion the whole of the instruction, except that in English, should be given in the vernacular, although technical terms (*e.g.*, "specific heat") should be given in their English form, since some pupils who prolong their studies after leaving school will wish to read textbooks written in English. As regards English itself, we would repeat here the opinion we have expressed elsewhere, that no attempt should be made to give the pupils an appreciation of literary style: they should be taught that variety of language which is used in the ordinary affairs of life.

### *The Third Year Course.*

88. A number of the pupils of a Junior Technical School will no doubt leave at the end of the second year, and if they have secured suitable employment then, no obstacle should be placed in the way of their taking it up, as those of them who have been diligent will certainly do credit to the school. Some pupils will, however, wish to extend their course by another year, and

for these there should be some degree of specialisation in the direction of a particular branch of industry.

89. There is no doubt that in every area we have visited, there is need for a supply of men better trained in general engineering practice, who can be entrusted with the maintenance and repair work of garages and of larger works: and, with the increasing use of electricity for power and light, the demand for trained electrical fitters is bound to grow. The Junior Technical School can therefore begin with confidence to give specialised training in its third year's course in these two branches of industrial knowledge. In doing so, it will continue the instruction in mathematics, Technical Drawing, Science and workshop practice, but will necessarily modify these—and particularly the last—in accordance with the specific requirements of the pupils.

90. In some areas, where textile spinning and weaving are of importance, special instruction should be provided in the third year course for those intending to enter these branches of industry. In these cases the course will diverge far more from that provided in the first two years than in the case of general Engineering Practice and Electric Fitting, for the pupils are beginning to study the properties and behaviour of an entirely new material. A suitable distribution of the time available would be:—

	Hours per week.				
Mathematics .. .. .	..	..	..	..	2
Mechanics (including the study of mechanisms) .. ..	..	..	..	..	3
Engineering Workshop .. .. .	..	..	..	..	3
Textile spinning .. .. .	..	..	..	..	8
Textile weaving .. .. .	..	..	..	..	8
Chemistry .. .. .	..	..	..	..	4
Economics of Industry .. .. .	..	..	..	..	2
Total ..	..	..	..	..	30

91. Still another branch of instruction which might be of value in some areas is that in "Light engineering", which we have seen carried on with success at the Lucknow Technical Institute. It includes the training of boys who wish to become repairers of clocks, watches, sewing machines, gramophones and similar small instruments or machines. The first two years of the Junior Technical School course would form an excellent preparation for specialised training in this work, which has the very great advantage that it develops the qualities of accuracy and exactness in the students. It should be added that there is no scope for many courses of this kind in either of the Provinces visited. It is indeed probable that the course at Lucknow is all that is needed in the United Provinces, and that the establishment of another in the same Province would tend to diminish the stability of this; but it is likely that a course in light engineering would serve a useful purpose in the Punjab, where Lahore appears to be the most suitable centre.

We realise that light engineering is not a "Large-scale" industry, but we have nevertheless included reference to it under this heading, since the training for it is so similar to that needed by those entering organised industry.

*Atmosphere of the Junior Technical School.*

92. We think it worth while to quote an extract from one of the publications of the Board of Education, which describes clearly the 'atmosphere' of the Junior Technical School:—

"The Junior Technical School is pervaded by an 'atmosphere' readily perceived by the visitor but difficult to convey in words. The pupils attack their work with a seriousness and satisfaction not always found in schools for pupils of their age. They concentrate because they are interested, they are interested because they have no difficulty in realising the direct bearing of their work on their future lives. They have the air of knowing exactly what they are doing, and exactly why it is worth doing. From the purely educational point of view, this is the most interesting and satisfactory feature of the work of these schools. If a cultural education means an education which cultivates to the fullest extent the latent powers of the pupil, so as to fit him to take his place, as a self-respecting citizen, in a community worthy of his membership, the unprejudiced visitor to the Junior Technical School will admit that it is giving a more truly cultural education than many institutions which make greater pretensions in this respect. By setting up high standards of skill and accuracy, the school imparts to its pupils a strong sense of individual responsibility; by cultivating a pride in good craftsmanship, it lays a sure foundation for self-respect and respect for fellow workers; by appealing to the deep desire of adolescence for a definite place in the world of adults, it is able to awaken intellectual interests which persist and grow long after school days are over."

*Staffing of the Junior Technical School.*

93. It is advisable that the principal of the Junior Technical School should be an engineer who has had both a university training and actual experience of industry. He should have a university degree, in order that he may possess a status equivalent to that of the principals of the Higher Secondary Schools, whose work is parallel to his own; and good industrial experience is necessary for him if he is to gain the confidence of the industrialists with whom he comes into contact in the course of his duties.

The qualifications of the staff assisting the principal will naturally be determined by the nature of the subjects taught. A proportion of the assistant staff should, however, have qualifications of the same kind as those of the principal, partly because of the need for first-rate instruction in science, technical drawing and workshop practice, and partly because it is desirable, especially in the early stages of what we hope will be an expanding system of vocational education, to have a "pool" of suitable men as assistants, from which the future principals of Junior Technical Schools can be drawn.

*External Relationships of the Junior Technical School.*

94. Although the Junior Technical School is undoubtedly a part of the educational system, it can be regarded with equal propriety as part of the

industrial system of the country. It is, in fact, a link between the two systems and it is highly important that this should never be forgotten. The principal must therefore keep in close touch, on the one hand, with the headmasters of the schools from which his pupils are drawn, and must make himself responsible for keeping them informed of the qualities and attainments which he looks for in the candidates for admission to his school. He must, on the other hand, take every opportunity of meeting members of the various firms in his neighbourhood who are potential employers of his pupils, and of learning both the nature and the volume of their requirements in the way of recruits. He can indeed do much, as experience in England has shewn, to "place" his pupils in satisfactory employment at the end of their course, if he has established the right kind of relationships with prospective employers.

### *The Senior Technical School.*

95. The Senior Technical School will normally devote its attention to the vocational education of boys who have had a prolonged general education and intend to enter one of the "non-manipulative industries" with a view to holding a supervisory position. For these industries, the educational qualifications of those above the rank and file are a good knowledge of chemistry and of the way in which it is applied to a branch of industrial practice, experience in the handling of machinery, and an ability to make and understand technical drawings.

96. These requirements point to the need for including in the curriculum instruction in physics, since this subject is of use from two points of view; it gives the student that fundamental knowledge of heat and electricity which is so often essential to the economical use of mechanical or electrical plant; and it is so closely related to chemistry that it assists the profitable study of this subject.

Chemistry must necessarily be included. In its early stages, it should be mainly a continuation of the study of this subject made during the High School course, since what is desirable is, first of all, a sound acquaintance with its principles. In the second year, students may be taught how these principles are applied in practice to the problems of a branch of industry.

Mathematics, mechanics, machine drawing and instruction in a metal workshop are the remaining subjects of the curriculum; they may well be taught to about the same standard as is reached in these subjects in the Junior Technical School. In the subject of mechanics, however, it would be of advantage to include lessons in mechanism, that is, in the methods of transmitting power and of converting one kind of motion into another. Some attention should also be paid to giving the students an elementary acquaintance with the production and application of electricity.

## CHAPTER VII.

### EDUCATION FOR COMMERCE IN VOCATIONAL SCHOOLS.

97. This branch of vocational education differs so greatly from education for industry that it demands separate consideration. It must be so framed as

to meet the needs of both the two main groups into which we have divided workers in commercial occupations, that is, (a) of the group of which the members have the responsibility for transacting business on an important scale, or for performing the professional functions of banking, accountancy and the like, and (b) of the very large group engaged in recording the transactions of the members of the first group.

### *Education for Commercial Responsibility.*

98. We believe that the best education for the business man with great responsibilities over a wide field is one which develops in him certain valuable personal qualities. He needs imagination, initiative, courage, administrative ability, sound judgment of men and things, and, above all, the quality of leadership. None of these can be directly taught in the school, although the school can do much to foster them through its calling for their regular exercise in all kinds of mental and physical activities. If the school is organised as a real society, where students possess privileges only in so far as they are willing to accept responsibilities, individuals amongst them will gain the qualities we have mentioned and will exercise them in the world outside; and this is greatly to be desired.

We deprecate instruction in such subjects as economics during the earlier years of school life, since their proper understanding demands knowledge and experience of the outer world which the pupils have not yet acquired. In saying this, we are not suggesting that the pupil who is destined to great responsibilities should receive no vocational education; but in our view all that is necessary for him is sufficient education of this kind to make the path from the world of school to the world of business more smooth.

99. A young man who is practically certain to succeed in due course to the *commercial* control of a business should not be pressed to study commercial and economic subjects if he goes to a university, unless these have an attraction for him. He will, we believe, be better advised to follow his own bent. This liberty of choice should, however, be conditional on his devoting all his energies to gaining such a mastery over his chosen subjects as is consistent with his age and his degree of maturity. Further, he should take an active part in the general life of the university outside the lecture room and the laboratory. The habit of hard work, the flexibility of mind, and the ability to co-operate readily with others which are developed by these means will stand him in good stead in his business career, and will, we believe, be just as profitable to him as the study of commercial subjects.

Valuable as is this type of education for those who are born to great responsibilities, it is not equally suitable for young men who have to make their own way in life. Such a course as is given in the commercial departments of universities is better adapted to their requirements, since they have to shew, from the very outset of their working life, that they have exact knowledge which will make them immediately useful to their employers. But the development of the same personal qualities as are demanded of men occupying high posts should not be forgotten.

For those unable to undertake university studies, the Senior Vocational School described later would provide a useful preparation for commercial life, though it is planned for workers on a lower plane. It gives a knowledge of the structure and machinery of commerce, equips those who follow it with some of the forms of skill which are exercised in commercial undertakings, and, if it is properly carried out, ensures the development in them of the right attitude towards the problems they will encounter.

### *Education for Professional Careers.*

100. The professional man engaged in accountancy, insurance or secretarial work in commerce ought to have the same status as the *entrepreneur*, and should possess the same personal qualities, though not necessarily to the same degree. It is more easy to define the kind of vocational knowledge he should acquire, since he deals with a particular aspect of business. His work is ancillary to that of the *entrepreneur* and less dependent, as a rule, on shrewd judgment and enterprise; he can therefore be entrusted with considerable responsibilities at an earlier age. We contemplate that the vocational education provided for the members of this important group of commercial workers will be quite specifically related to their several professions. It should not be given before they enter employment, but provided in part-time classes which they attend during their "pupilage".

### *The Education of Clerical Workers.*

101. The qualification required of clerical workers is skill in the "office arts", that is, in shorthand, typewriting, the elements of book-keeping, recording and filing. With this skill should be associated the ability to make quick and accurate calculations, a sound knowledge of geography, and considerable powers of oral and written expression. In addition, they should be able to receive messages and to transmit them correctly, especially when they are given by word of mouth.

If it were not for the fact that so many clerks need a knowledge of English, which can only be acquired by an education prolonged to the High School stage, we should have recommended that the Governments concerned should establish in suitable centres "Junior Commercial Schools", exactly parallel to the Junior Technical Schools we have discussed. The requirement in so many instances of a working knowledge of English is, however, a factor which cannot be neglected; and accordingly we recommend that "Senior Commercial Schools" should be established in those centres where a survey of the needs indicates that they will serve a useful purpose. We emphasise the necessity for such a survey, as we are aware that schools preparing pupils for clerical occupations already exist in some centres.

The instruction given in a Senior Commercial School should not be too vocational in character, since what is needed of a clerk is not only skill in the "office arts", but also alertness, accuracy and a sense of responsibility. The schools should devote much of the time at their disposal to continuing the general education of their pupils. Thus, the study of arithmetic should

be continued, but the examples should, as far as possible, be drawn from commercial practice; short methods of calculation should be taught; and there should be regular practice in mental arithmetic. The plotting of graphs indicating periodical variations in prices, quantities, etc., and the interpretation of such graphs should be included.

At an early stage of the course, an elementary study of accounts should be begun and related very closely to arithmetic; the instruction should aim mainly at giving pupils a sound knowledge of the principles of book-keeping rather than a detailed acquaintance with their application in commerce.

Geography should continue to be taught, but from its commercial aspect, since at this stage of the education of the pupil utilitarian considerations are predominant so far as this subject is concerned. This does not mean that no reference should be made to the physical characteristics of the various regions and countries, but such reference should normally have a bearing on the study of the methods of exchanging goods and services which are denoted by the term "Commerce".

Shorthand and typewriting form a necessary part of the equipment of a very large proportion of clerks, and should therefore be included in the curriculum of the Senior Commercial School. It is desirable that a daily lesson in shorthand should be given to pupils during the whole of the course.

102. An important subject in the curriculum of a Commercial School is that known in England as the "Elements of Commerce", which includes an elementary descriptive account of the structure and methods of commerce, and thus serves to make the transition from school to business less bewildering to the new recruit.

While the object of the instruction in most of the subjects is quite plain, some explanation of what is meant by "the Elements of Commerce" is probably necessary. There is no doubt that a clerical worker will usually do his work more efficiently from his employer's point of view, and with more satisfaction to himself, if he has not only the special knowledge needed for his own job, but also an appreciation of the part he is playing in the organisation of the business as a whole. Accordingly, the pupil in a commercial school should learn something of the structure and methods of business. His instruction should begin with an account of retail trade, since this is usually the simplest form of trade organisation; he should learn how and from what sources the stock is obtained and replenished, and how it is paid for; he should gain a knowledge of the respective advantages and disadvantages of cash and credit trading; and he should be familiar with the calculation of gross and net profits and the relation of these to turn-over and to the amount of capital used in the business.

From a consideration of retail trading, he may proceed to that of wholesale trading, learning of the services this performs to the producer, on the one hand, and to the retailer, on the other.

He should have an acquaintance with the organisation of transport, with the elementary functions of banking, and with the methods of covering risks by insurance.

From this, he can go on to study the typical forms assumed by trading firms—the sole trader, partnerships, joint-stock companies, combines and co-operative societies ; and to the characteristics of different kinds of markets—organised and unorganised.

A syllabus of the instruction sometimes provided in “ the Elements of Commerce ” is included in Appendix II.

It has been found in actual practice that instruction of this kind serves a useful purpose. There are, however, two directions in which its treatment tends to err. On the one hand, the teaching sometimes includes too many abstract conceptions, which are too difficult for the students to understand, owing partly to their lack of the experience necessary to relate them to practice, and partly to their immaturity of mind. On the other hand, the desire for a concrete treatment of the subject occasionally leads to the inclusion of details which have no proper place in the subject, or are unsuitable for teaching in a school.

The more usual defect is abstractness, and the only satisfactory way of avoiding this is to base the instruction, as far as possible, on concrete transactions. The appropriate method is therefore quantitative and descriptive, and the pupils should be helped to understand the procedure adopted in business by an examination of the documents used ; but in no case should these be used except to illustrate and to clarify procedure in relation to specific transactions. They should never be made an object of study in themselves, without relation to the transactions they are used to facilitate.

As regards the study of English, a daily lesson is essential if the pupils are to acquire ease and accuracy in its use ; but, as in other vocational schools the English taught should be simple, everyday English, such as is used in conversation or in business correspondence. We make this recommendation with some emphasis, as we have seen in India boys striving to understand complicated extracts from Macaulay and other English authors, although they found great difficulty in understanding a simple English sentence, spoken slowly and plainly. What is known as “ Commercial Correspondence ” should not be taught. If pupils are trained to make clear, adequate and accurate statements of facts or opinions, they will be able to write business letters quite satisfactorily. It is important that the pupils should also be able to transmit a message given to them orally, and accordingly the English lesson should afford practice to them in the transmission of oral messages ; this is especially desirable now that the use of the telephone has become so frequent, but it is valuable at all times.

An equally useful exercise is that of writing *précis*, since it demands both understanding of the passages to be summarised and skill in the selection and arrangement of the points to be included in the summary. This exercise should, however, be postponed until pupils have acquired considerable skill in the use of the language ; and care should be taken with pupils of the age of those attending Senior Commercial Schools, that the passages set are simple in construction and free from words not commonly used.

103. If facilities are available, pupils should be taught to file papers and to use the telephone and other parts of the ordinary equipment of an office ; but



practice in this may be postponed until near the end of the course, and no definite allocation of time to it need be made.

104. To sum up, the curriculum of the Senior Commercial School should include—arithmetic; the elementary principles of accounts; geography; shorthand; typewriting; the elements of commerce; English.

The allocation of time to the various subjects may be as follows:—

English	..	..	..	..	..	7 hours a week.
Geography	..	..	..	..	..	2 "
History	..	..	..	..	..	2 "
Shorthand	..	..	..	..	..	5 "
Typewriting	..	..	..	..	..	5 "
Book-keeping	..	..	..	..	..	2 "
Arithmetic	..	..	..	..	..	3 "
Elements of Commerce	..	..	..	..	..	2 "
Physical Training	..	..	..	..	..	2 "
Total .. ..						30 "

In schools where it is found that the pupils have already a fair knowledge of English, the time allotted to this subject may well be diminished, since practice in the language is afforded by the lessons in both shorthand and type-writing; the time saved—which might be as much as three hours a week—may be devoted to geography, which we often found to be a weak subject in the schools we visited, and to history and the elements of commerce.

#### *Standard of Entrance to Senior Commercial Schools.*

105. Students admitted to these schools should have passed successfully through the full course of the High School, and should usually have passed the Matriculation or other examination taken at the end of Class XI.

#### *Length of the Course.*

106. The normal length of the course of instruction should not exceed two years, as it is possible for a pupil of ordinary intelligence, who has acquired habits of diligence during his earlier studies, to cover it quite satisfactorily in that time. There is the further consideration that the pupil will probably be 18 or 19 years old at the end of a two-years' course, and by this age he certainly ought to be thinking of entering employment.

#### *Staffing of the Senior Commercial School.*

107. The principal of the school should have good academic qualifications, since he is dealing with pupils whose general education has been prolonged. If possible, he should have had business experience, which has given him opportunities of observing the practice of commerce, even though he may have gained

it in an industrial rather than a purely commercial firm. The assistant staff will have the qualifications appropriate to the subjects they teach ; but in their case also, experience of business is of advantage, since it enables them to make the instruction realistic by the introduction of examples drawn from the actual practice of commerce.

*External Relationships of the Senior Commercial School.*

108. Like every other type of vocational school, the Senior Commercial School should be constantly in touch with industry and commerce. The contacts made may be formal, through the principal serving on business committees where these exist, or through business men serving on an Advisory Committee established by the school ; or they may be informal, through the principal meeting members of business firms socially or otherwise. But whether formal or informal, the relationship of the school, and of its principal and the responsible members of his staff, with business firms and organisations, should be intimate. There is no other method so valuable as this for securing the welfare of the school and its pupils, or indeed for increasing the efficiency of the personnel of commerce.

## CHAPTER VIII.

### THE EXISTING INDUSTRIAL AND TECHNICAL SCHOOLS.

*Their Origin and Development.*

109. We have necessarily considered the place to be occupied in a re-organised system of education by the existing industrial and technical schools, whose development was encouraged by the Indian Industrial Commission which reported in 1918. This Commission described the history of the industrial schools engaged in the training of boys for cottage industries and recommended that they should be placed under the control of the Department of Industries in each province, rather than under that of the Department of Education. They made the same recommendation with regard to the training of the supervisory class of workers in organised industries, and set out a scheme of engineering training which they considered could be applied, as opportunity served, to the case of other large-scale industries.

At the time when they reported, the industrial schools in both the Punjab and the United Provinces were administered by the Department of Education, but those in the latter area were inspected by the Director of Industries, who "practically controlled" them.

110. In making their recommendations, the Commission did not belittle the importance of general education, for they stated (Section 142 of their Report) :—

"A factor which has tended in the past to delay the progress of Indian Industrial development has been the ignorance and conservatism of the uneducated workmen. The evidence tendered by employers was almost universally in favour of labour, both skilled and

unskilled, that had at least received a primary education. This is given in countries with which India will have to compete and is a *sine qua non* in this country also."

After quoting examples of employers providing primary, and in some instances elementary technical education, they went on to say :—

" But we are not prepared to declare that the education of their labour is a duty of employers as such, and while we strongly endorse the views of employers of labour regarding the fundamental necessity of providing some form of primary education for the artisan and labouring population, we are opposed to any scheme which would compel individual employers to provide such education."

Accordingly, they recommended that " government should consider the desirability of introducing into primary schools a form of teaching which would include drawing and manual training as a means of developing in the pupils a practical industrial bias ". It appears therefore to have been the view of the Commission that pupils intending to go into industry should do so at the end of their primary education, and that even at this early stage their future occupation should have been borne in mind.

111. The result of this recommendation was the transfer in 1925 of the industrial schools in the Punjab, which had not been very successful, to the Department of Industries, the intention being to train literate craftsmen in traditional callings, such as carpentry, smiths' work, weaving, lacquer turning, coppersmiths' work and the like. With this end in view, the schools were completely re-organised. Their primary departments gave instruction in the ordinary subjects, but included drawing and kindergarten work ; in the Middle departments, the pupils spent half their time in learning arithmetic, Urdu, elementary geometry, science and freehand, model and technical drawing, while the remaining time was devoted to gaining skill in one of the trades mentioned above.

112. It is by no means certain that the recommendations of the Commission were really carried out, as there may have been some misunderstanding of the term " primary education ". In England, this was formerly used very commonly to denote that grade of education which began at the age of five and was completed at the age of thirteen, while it is employed in the Punjab to denote the grade which ought to be completed by the age of ten or eleven. It seems probable that the Commission were using the English rather than the Indian terminology.

If this interpretation of the recommendations of the Commission is correct, the plan adopted in the Punjab introduced trade instruction into the schools four years earlier in the life of the child than was intended by them. That it is correct is, we think, borne out by the further statement they made (Section 178) that " in the case of industrial schools, where craftsmanship is the all-essential feature of the training, the small amount of general education can easily be supervised by any person of ordinary intelligence, whilst the teaching of craftsmanship must be provided and controlled by an agency which knows from practical experience the type of employee required by an industry, and can judge if the requirements have been fulfilled."

113. The Commission did not, however, regard the industrial school, even when conducted, as they suggested, under the control of the Department of Industries, as likely to be very successful in the achievement of its aims, for they said (Section 144) :—

“ The Industrial School is at best a defective instrument of education owing to the non-commercial conditions under which it must necessarily be carried on. In spite of this, it seems to be the only means by which the indigenous artisan can be trained, though in the past, through his ignorance and lack of education, and through the imperfection of their equipment and teaching staff, Industrial Schools have failed, in the majority of cases, to achieve any appreciable results. While, therefore, the institutions are to be encouraged within the limits specified, we regard them as altogether unsatisfactory if employed to train artisans for organised industries.”

We are in agreement with the views of the Industrial Commission as to the inherent defects of the Industrial School carried on under the conditions they mentioned, that is, when it is conducted under non-commercial conditions for pupils who have had little or no previous education, with imperfect equipment, and by teachers who are not well-qualified. It is clear, however, that if these known obstacles are removed, the Industrial Schools will have a far better chance of success. We return to this point later.

#### *Industrial Schools in the Punjab.*

114. Experience shewed that in the Punjab the schools were popular, and in most instances had more applicants for admission than could be accommodated. Few Schools had less than a hundred pupils ; many had three hundred ; and one had as many as seven hundred.

115. In 1932, it was decided by the Ministry of Industries in the Punjab to stop recruitment for the schools, partly because they had led to no industrial development, which indeed was not surprising, and partly because it was thought that the average carpenter and smith were sufficiently well equipped for the trades they followed. In this Province, the schools were in future to work on a productive basis, the boys were to be regarded as apprentices, and an attempt was to be made to introduce new industries rather than to consider the needs of industries already existing.

This decision was one of great moment, for it changed completely the aim of the institutions which it affected. Under the previous conditions, they had been *schools* whose main object was the preparation of boys to begin work in artisan occupations at the age of 13 or 14 ; under the new conditions, they were bound to be primarily *productive workshops* for older boys, rather than schools, though, from the fact that the boys were to be regarded as apprentices, the educational aspect of the institutions was not to be overlooked. It is true that in the Punjab, they are still called “ Schools ”, but that term does not convey an exact description of their function. They make and sell goods just in the same way as an ordinary factory, but differ from this in three respects. In the first place, the work is done by apprentices working under the direct and close

supervision of a number of teachers skilled in the crafts practised; in the second place, the apprentices are given theoretical instruction relating to the trade they are learning in very much the same way as apprentices in European works who are given "time off" during working hours, in order that they may attend school; and, finally, they are in receipt of State subsidies.

116. The existing industrial schools of the Punjab are engaged in training boys in hollow-wāfē castiṅg (using local materials instead of those imported from other Provinces), tailors' cutting and fitting, the making and repair of sewing machines and of hosiery machinery, die sinking, hosiery manufacture, weaving and dyeing, woodworking, the making of folding furniture, tool making, lock making and the manufacture of agricultural implements. It will be noted that this list includes training for both crafts—such, for example, as tailor's cutting and fitting—and for work in organised industries, such as the making of sewing machines and hosiery machinery.

### *Industrial Schools in the United Provinces.*

117. Although technical education has been provided on a small scale for many years in the United Provinces, it was not until recently that any considerable expansion took place. In 1910, there were only four Government schools in these Provinces teaching vocational subjects, but this number had by 1931 increased to thirty, while in addition there were 66 grant-aided schools carried on by local bodies and private organisations. Some of these schools have now been closed; with the result that there are at the present time 25 Government institutions and 47 institutions aided by grant.

118. For general purposes, the Government institutions are classified as follows :—

#### *First Class:*

- (a) Harcourt Butler Technological Institute, Cawnpore.
- (b) Government Technical School, Lucknow.
- (c) Do. Gorakhpur.
- (d) Do. Jhansi.
- (e) Government Textile School, Cawnpore.
- (f) Government School of Arts and Crafts, Lucknow.
- (g) Government School of Dyeing and Printing, Cawnpore.
- (h) Government Carpentry School, Allahabad.
- (i) Central Wood Working Institute, Bareilly.
- (j) Central Weaving Institute, Benares.
- (k) Leather Working School, Cawnpore.

(We were able to visit all these schools except those at Gorakhpur and Jhansi.)

*Second Class.*

- (a) Metal Working School, Aligarh.
- (b) Batuk Prasad Khattri Industrial Institute, Benares.
- (c) Leather Working School, Meerut.
- (d) Weaving and Cloth Printing School, Bulandshahr.
- (e) Tanning School, Fatehpur.
- (f) Carpentry School, Dehra Dun.
- (g) Do. Naini Tal.
- (h) Do. Fyzabad.

*Third Class.*

The " Model Weaving Schools " at Muzaffarnagar, Khairabad, Najibabad, Almora, Agra and Mau.

Although this classification is based on the qualifications and rank of the principals of the schools, as well as on the grade of work done, we are inclined to agree with the Director of Industries of the United Provinces that it is preferable to classify the different institutions in accordance with (a) the initial qualifications of the pupils in attendance and (b) their expressed aims. The schools would thus be divided into :—

- (a) *Trade Schools*, where boys are trained for employment as handicraftsmen by following what is, in effect, an apprenticeship.
- (b) *Industrial Schools*, which prepare their students for working on their own account in small-scale industries.
- (c) *Technical Schools*, in which students, after a sound education in the principles underlying industrial practice, are equipped with knowledge which will fit them for responsible industrial posts.

If, however, this classification is adopted, it is not easy to follow it exactly in drawing up a list of schools, since the same school, *e.g.* the Central Wood-working School at Bareilly, would find a place under at least two of the headings. Nevertheless, the classification appears to us to be sound.

*Organisation and Equipment of the Schools.*

118a. In spite of any criticisms of the system we may have to offer, we wish to say at the outset that we have been favourably impressed by the work of the organisers and many of the teachers in the schools, and by the skill gained by the pupils. We ought to make special mention of the sketches and working drawings made in the schools where these are appropriate, as they frequently reach a very high standard.

The equipment of the Industrial and Technical Schools is usually excellent, and compares favourably with that found in many European schools with the same aims as these.

*Staffing of the Schools.*

119. The staffing of the schools is on a liberal, and occasionally on a lavish scale, and the various teachers appeared to us to be suitably qualified for the work they are called upon to do. Some of the principals of the schools are undoubtedly men of outstanding ability, whose services will be of great value in any future development of vocational education in India.

*Annual Expenditure on Trade, Industrial and Technical Schools.*

120. We have made inquiries as to the annual cost of the various industrial and technical schools in the two provinces, with the result shewn in the following tables\* :—

*Punjab.*

Name of Place.	No. of pupils.	Budget estimate.	Average cost per pupil.
		Rs.	Rs.
Amritsar .. .. .	8	7,657	957
Ferozepore .. .. .	57	14,478	254
Gujranwala .. .. .	40	13,614	340
Jhelum .. .. .	18	11,248	625
Jhang .. .. .	68	11,003	162
Kasur .. .. .	30	12,535	418
Kulu .. .. .	19	5,373	283
Ludhiana .. .. .	20	17,066	853
Lyallpur .. .. .	67	19,355	289
Muzaffargarh .. .. .	40	9,021	225
Rawalpindi .. .. .	75	12,672	169

\*We understand that in the estimate and statement of net expenditure no account is taken in the Punjab of the capital expenditure on equipment.

## United Provinces.

Name of Place.					No. of pupils.	Actual net expenditure.	Average cost per pupil.
						Rs.	Rs.
Agra .. .. .					13	2,212	266
Aligarh .. .. .					56	13,441	222
Allahabad .. .. .					194	51,598	266
Almora .. .. .					9	4,343	482
Bareilly .. .. .					175	72,050	411
Benares .. .. .					106	16,405	155
Bulandshahr .. .. .					26	14,997	576
Cawnpore .. .. .					267	2,32,197	869
Dehra Dun .. .. .					20	6,676	333
Fatehpur .. .. .					23	6,683	290
Fyzabad .. .. .					13	8,912	684
Gorakhpur .. .. .					209	45,088	215
Jhansi .. .. .					70	20,209	289
Khairabad .. .. .					14	4,388	313
Lucknow .. .. .					344	1,30,998	381
Mau .. .. .					18	3,872	215
Meerut .. .. .					39	11,502	294
Muzaffarnagar .. .. .					15	4,672	311
Nainital .. .. .					194	51,598	266
Najibabad .. .. .					12	4,749	395

121. These costs are certainly high in comparison with those contemplated in the report of the Indian Industrial Commission, which stated\* :—

“The five Government Schools of Art train 1,310 pupils at a cost of Rs. 2,61,314, which works out almost exactly to Rs. 200 per head.

\*NOTE.—It is of interest to compare these costs with the average cost per pupil in 42 Junior Technical Schools in England. In 1936, this amounted to £23-2-0 (Rs. 308) per pupil.



The Government technical and industrial schools, which are really all industrial schools, are 38 in number and train 2,431 students at an average cost of Rs. 160 per head. Those under private management aided by Government are 85 in number and train over 4,000 students at an average cost of Rs. 177 per head. These are mainly mission schools."

"These average figures are not of much value, as they relate to institutions of very different merit. In all these schools some part of the receipts is derived from the sale-proceeds or work done in the school by the pupils, and in the better-managed schools this is an important source of income. Taking this into account, we think that industrial schools can be run at an average cost per pupil of Rs. 200 per annum, and that they can be established with a capital of Rs. 500 per student. Ordinarily, schools should not train more than 100 pupils at a time."

122. It has to be remembered that the Industrial Commission reported in 1918, when the purchasing power of money was greater than it is now; and further, that they were not thinking so much of "technical" as of "industrial" schools, which would derive some income from the sale of the goods they made, and thus diminish their net expenditure. Even taking these important factors into consideration, there is no doubt that some of the schools are more costly than they ought to be, although the schools doing very advanced work as well as the larger institutions mentioned in the list are, we believe, justifying the expenditure they involve. We suggest, however, that the Departments concerned with the control of industrial and technical education should review the expenditure carefully. In particular, we recommend that they should consider the advisability of—

- (a) Concentrating the instruction into a smaller number of institutions, and
- (b) raising the standard of entrance to some of the schools, and thus diminishing the length of time spent in them by each student.

#### *The Policy of Concentration.*

123. It was obvious to us in some of the schools we visited that the teachers could, without any inconvenience, have handled larger numbers of students than were in attendance in their classes. Continued efforts are needed to make these schools more popular, in order that the number of pupils in each class may be enlarged within reasonable limits until it reaches what may be termed "an economic size".

124. In visiting the Industrial Schools, we noted that the majority of them approximate to "monotechnics", that is, each of them teaches a limited range of industrial subjects, or, in some instances, only one subject. Further, we have been struck by the fact that some schools lack permanence; they train a number of pupils who wish to enter a particular branch of industry, and abandon their work as soon as the supply of these is no longer forthcoming. We have heard, too, of cases where a local desire has been expressed for the establishment of a particular form of trade instruction and the Department

concerned has made arrangements for meeting this, only to find that few or no pupils presented themselves.

In addition to these difficulties, it is sometimes found that suitable premises are not available in an area where instruction is really desired.

125. Even where these obstacles are not encountered, the monotechnic type of organisation, although it may involve smaller initial capital expenditure on buildings, has several disadvantages :—

(a) It leads to increased annual expenditure, since certain services—supervision, clerical assistance, motive power and cleaning—are necessarily duplicated to some extent ; the same may be said of the expenditure on teaching since it is impossible in a small institution to group together for certain subjects pupils taking different courses which have nevertheless a common basis.

(b) A small monotechnic, situated perhaps in an obscure part of a town, does not strike the public imagination in the same degree as a larger institution, accommodating classes in a wide range of subjects, undoubtedly does. For example, it is probable that few persons, except those immediately concerned, know the brass-working school in the bazaar of Benares or, at any rate, are acquainted with the quality of the work it does, while the public generally would be interested in a polytechnic institution in the same city, if it provided education for a large proportion of the important trades carried on there. We are well aware of the difficulties—financial and other—of providing suitable accommodation in one imposing building in each great city for the variety of trades carried on within it. At the same time, we think it necessary to indicate what we believe to be the ideal to be approached ; and we are not without hope that in the re-organisation of the educational system which is now under discussion, some of the great cities of the Provinces we have visited will find it possible to utilise the premises of an existing school for the purpose of providing under one roof most of the vocational education needed by the community. It is impossible to suppose that the present provision of education in technology and art in the greater industrial towns we have seen will be adequate for future demands, if the intention to develop organised industries in India is fulfilled ; the authorities concerned should therefore take a long view.

#### *Raising the Standard of Admission to Industrial and Technical Schools.*

126. We have inquired as to the minimum qualifications required of candidates for admission to industrial and technical schools and learned that, in certain classes intended for purely manual workers, the ordinary standard prescribed is that of the Eighth Class, while in other cases, where the foundation of general education must be more complete, the standard required is that of the Matriculation examination. In such an institution as the Harcourt Butler Technological Institute, it is necessarily much higher, as the work done there is mainly post-graduate in standard.

During our visits, we frequently found that pupils who had left school below the Eighth Class were admitted to Trade Schools and to artisan classes generally. In other instances, the students in the Industrial and Technical Schools were considerably older than we should have expected from the conditions laid down for admission to the School. In the case of matriculated students, the reason is, we understand, that some of them after trying without success to obtain a post in commerce or in Government service, have joined an industrial school in the hope of qualifying for a career different from the one they had originally contemplated and on which their ambitions were set. Such students cannot usually furnish the best material, either for the industrial schools or for industry itself, especially if they have not included science in their matriculation course. We may refer incidentally here to the late age at which a number of young men enter industry. It is often surprisingly high. A student who has passed the matriculation examination at the age of sixteen or seventeen, and then spent a year or so in looking for a job before entering upon the course of an industrial or technical school must be not far short of 22 years of age before he enters industry and begins to earn his living: and in general this is not satisfactory, either from the point of view of the employee or of the industry in which he is employed.

The most effective preparation for successful work in an industrial or technical school is either the High School course up to matriculation standard, with a good grounding in mathematics and science, or the course of the Junior Technical Schools which we have described in Section 80 *et seq.* The former is preferable for students who think of entering an industry like dyeing, which depends so much on a knowledge of chemistry and physics, while the latter is the more suitable for students who desire to enter industries where machinery is largely used; for there can be no doubt that a boy who has gained a sound knowledge of mathematics, of science and of the principles of geometrical projection, and has been taught either wood work or metal work in a properly equipped workshop, will very quickly learn to apply his knowledge and skill to those numerous branches of industry where they are of fundamental importance. Indeed, we are of opinion that by making the Junior Technical School the normal method of approach to the Industrial School which prepares for the non-chemical industries, the length of the course in the latter type of school could be cut down by at least one, and possibly by two years. This would be a great gain, since it would diminish the expenditure on the individual student in the Industrial School. It would have the additional advantage, whose value it is difficult to over-estimate, that the student would begin to earn wages earlier in life, when he is still young enough to be influenced greatly by the business-like atmosphere of the workshop.

#### *Trade Schools.*

127. Following the definition of the function of the Trade School given in an earlier section [Section 55(c)], we may regard this type of school as constituting a form of apprenticeship for boys who intend to qualify as handicraftsmen and will, as a rule, belong to the employed rather than the employing classes. They will need less instruction therefore relating to costing, the conduct of business and the keeping of accounts.

A competent craftsman should be thoroughly acquainted with his raw materials, whether of wood, metal, leather, textiles or other material, and with their working properties. He can gain this by no other means than that of utilising the materials for the production of objects either by hand or with the help of simple tools. He should have great skill of hand and eye; this again comes only with long practice. He should possess at least an appreciation of art, and if he has the necessary gifts, some skill in designing; this means that he should have received systematic training in art.

128. In view of all these requirements, we should have preferred to recommend that entrance to Trade Schools should be made conditional on the passing of the First Public Examination which it is proposed to institute at the end of Class VIII, since we believe that the first requisite of every skilled workman is a general education up to at least this stage. We recognise, however, that the insistence on such a standard of preliminary education would, in present circumstances, result in the schools having few or no pupils.

We recommend therefore that, for the time being, pupils admitted to this grade of school shall have reached a class not lower than Class VI; but in making this recommendation, we urge, first, that exceptions to this rule shall not be made in any circumstances; and, second, that when the conditions become sufficiently favourable, the entrance standard shall be that normally reached in Class VIII.

129. The instruction given in the Trade School usually aims at preparing pupils for entrance to skilled occupations in which manual dexterity is of great importance. It does not, like the Junior Technical Schools, give a training preliminary to employment which will be of value whatever the occupation selected from a range of cognate occupations.

130. The number of schools of this type is large on the continent of Europe, although it is small in every part of England except London. In Paris alone, the Trade Schools of its Chamber of Commerce provide trade instruction for more than seventy occupations, of which the main types are set out in Appendix III.

Trade Schools are of special value in countries where the industrial unit is small, for in a business employing a small group of workers, it is not usually sufficient for the apprentice to rely on learning the craft from the older workers with whom he is associated. It is possible that they may not be familiar with the best workshop practice, or they may be unwilling to teach him, or again they may have little skill in imparting the knowledge they themselves possess. It is because India has so many firms of small size engaged in very diverse branches of industry that the advisability of extending the provision of Trade Schools in appropriate centres should be carefully considered.

131. There is one factor which should always be taken into account. In no instance should a Trade School be established for training boys or young men for an occupation which is likely to be displaced by some other process, for there can be nothing more unsatisfactory to a man than to find that the skill he has acquired by long effort, and by which he earns his living, has been rendered valueless through the invention of a machine or the introduction of a new process. Examples of the diminution in the value of manual skill will occur

readily to everyone—hand-sewing has been partly replaced by the sewing-machine, as every visitor to a bazaar must notice; and woodworking, hand-spinning and weaving have been to some extent replaced by power-driven machinery. The list of decaying crafts is long, and it is growing longer. It is incumbent, therefore, on those responsible for the establishment of Trade schools, to make sure that the skills they impart will be, so far as can be judged, of permanent value to their possessors. Looking at the various occupations open to workers, there is little doubt that one variety of skill which is likely to remain of lasting value is that employed in the production of goods of artistic merit. There will always be a market for this in any civilised society, though the extent of the market may fluctuate with increasing or decreasing prosperity. For this reason, we are of opinion that if more Trade schools are established, proper regard should be paid to the needs of those crafts whose success depends on beauty of design and skill in workmanship. Amongst these are hand-loom weaving, the making of jewellery, leather goods, lacquer work, furniture and pottery, and the working both of the precious metals and of copper, brass and iron.

132. In addition to these artistic trades, there are others which can appropriately be taught in Trade Schools, such, for example, as the repair of sewing machines and type-writers, tailoring, and boot and shoe making and repair.

133. We regard it as essential to the full success of these schools that they shall devote about one-quarter of the available time to continuing the general education of the pupils, giving instruction in art to those intending to enter occupations where this will be of use, and in general subjects, including arithmetic and reading and writing to every pupil, since a knowledge of these subjects quickly disappears if pupils are not continually called upon to make use of them. The remaining three quarters of the time available should be spent in practical work in the craft, care being taken that the instruction is suitably graded.

### *Industrial Schools and Technical Schools.*

134. We group these two types of schools under the same heading, because we believe that the standard of entrance to both of them should be approximately the same, although their aims are not identical. The former aims at preparing students for carrying on small-scale industries on their own account, while the latter contemplates that its students will ultimately occupy positions of some responsibility in large-scale organised industries.

135. In both types, it is essential in the present position of Indian industries that practical instruction in the workshop shall occupy a very prominent place in the time table. We are informed by many competent observers that the workshop in India is not usually a very good school for obtaining a knowledge of first-rate workshop practice; and this is confirmed by the fact that the number of persons employed in an Indian factory or works is usually far greater than that employed in a works with a plant of the same size in England or on the continent of Europe. In Western countries, where the industrial system is much older, the standard of workmanship is often very high. Although this is by no means universal, it is sufficiently usual in Great Britain, for example, for

the burden of training recruits to industry to be shared between the industry and the school. The industry is expected to give its skilled workers, during their earlier years of employment, good practical experience, while the school devotes itself, in the main, to teaching them the scientific and other principles on which the practice of the workshop is based. The workshop and the school are thus complementary agents, both of which are necessary in the training of the fully equipped worker. On the continent of Europe, this sharing of the task of training industrial recruits is not so wide-spread as in Great Britain, it being a common practice for the school to give both theoretical and practical training. All things considered, we believe that this is, under existing conditions, a plan which is better adapted to Indian needs than is the English plan. Further, we are of opinion, that it will be necessary to adhere to this plan for many years, until, indeed, organised industry has reached a stage of development in India at which the sharing of the burden between industry and school can be adopted without the risk of the standard of craftsmanship being lowered.

135. In general, we are of opinion that the course in the Industrial School should not exceed two years for those of its students who have completed the course in a Junior Technical School before being admitted to this more specialised course.

136. It is desirable that students in the Industrial School shall be taught, side by side with their vocational instruction, such subjects as drawing, mathematics, book-keeping, and what we have termed "the elements of commerce", since they must be able to deal with clients by sketching for them the work they propose to do for them, to calculate its cost, to keep records of income, expenditure and profits, and to buy and sell skilfully. This kind of instruction may well occupy one-third of the total time spent in school.

137. While the technical school will devote the same attention to training in workshop practice as does the Industrial School, it will devote the remaining time to mathematics, science and technical drawing; for these constitute the foundations of industrial practice in many of the organised industries. Special attention to exact measurements, and to working within fine limits, should characterise the instruction in this type of school, since accuracy and finish are the marks of good workmanship and can only be acquired by practice.

*The Harcourt Butler Technological Institute, Cawnpore.*

138. Special mention should be made of this Institution, since it is intended that it shall be a centre for training men who will ultimately be amongst the leaders of the industrial development of the United Provinces. It has three departments, devoted respectively to (a) General Applied Chemistry, (b) Oil Technology, and (c) Sugar Technology, though this last section has now been transferred to the control of the Imperial Council of Agricultural Research.

The equipment for both instruction and research is good, and includes plant for production on the semi-manufacturing scale.

There is a Diploma course extending over two years, followed by post-diploma courses extending over the same period.

In addition to these, which are of a high standard, there are shorter courses requiring at least six months attendance for workers in the oil milling, soap making, and oils, paints and varnish industries.

The qualification for admission to the Diploma courses in each section is the possession of a B.Sc. degree ; the same requirement is made of students attending the shorter courses, except in the case of those taking the Sugar Boiler's or the Foreman Khandsari course, when it is lower.

The staff are well qualified for the work they undertake, and we believe that the institution is performing a most valuable service in equipping men of wide and sound previous education in science for important posts in the industries concerned.

### *The Control of the Technical Schools.*

139. There remains for discussion the important question of the control of the trade, industrial and technical schools, that is whether they should be transferred to the Department of Education when this assumes responsibility for a certain measure of vocational education ; or whether their control should remain, as at present, with the Department of Industries. The latter course was recommended in 1918 by the Indian Industrial Commission, which had carefully considered the various factors to be taken into account in reaching a decision on this point (Sections 178 and 179 of their Report) ; and their recommendation was accepted and acted upon.

140. We are bound to point out that in nearly every great industrial country of whose system of vocational education we have any knowledge (and we have obtained information on this point from more than twenty different countries) technical education and general education are administered by the same Department of State, i.e., the Ministry of Education, although this Ministry has, usually, separate sections each dealing with a particular branch of education. Nevertheless, we are not disposed to recommend that at the moment any transfer of the trade, industrial and technical schools should be made from one department to another, though we believe that such a transfer may ultimately be necessary. Our reasons for this conclusion are :—

- (a) It is not desirable to modify an existing arrangement, which is generally understood and accepted, unless quite cogent reasons exist.
- (b) The schools, as now organised, are often productive industrial undertakings rather than schools. Many of them buy raw materials, convert them into finished goods and sell the product ; and their aim is, in many instances, to give manual skill rather than scientific knowledge.
- (c) The Department of Education as yet have no staff competent to inspect and advise on technical education, whereas the Department of Industries in both provinces have officers of suitable experience and knowledge.
- (d) The industrial schools are aiming, not merely at training students but at developing fresh industries and using new local materials.

With the growth of preparatory vocational education and, as we hope, the development of technical schools of the polytechnic type in India, the conditions will be materially altered and the control of technical education may then have to be transferred, as in other industrial countries, to the Departments of Education. We believe, however, that at present the time is not ripe for this step to be taken.

*Administration of Junior and Senior Vocational Schools.*

141. What we have said about the control of Industrial and Technical Schools does not apply either to Junior or Senior Vocational Schools, whose educational content is so very closely related to that of the Schools of general education. We recommend that they should in each province be administered by the Department of Education.

*The Expert Inspection of Industrial and Technical Schools.*

142. We have noted with interest the recommendation of the Indian Industrial Commission that there should be "thoroughly qualified visiting experts" for industrial schools and that they should be included in the cadre of the Imperial Department of Industries. They say (Section 179) :—

"We think it necessary, for some time at any rate, to arrange for the provision of a system of regular visits by specialist officers of the Imperial Department of Industries. There is at present in the various provinces no generally accepted tradition of correct methods in these forms of teaching, and we think that local Governments and Departments of Industries would be greatly assisted in their efforts to create one, by occasional visits from Imperial officers, whose functions would be merely advisory, and would be confined to placing their notes and observations before the Local Governments for consideration. The specialist visitors would form a convenient channel for transmission to one province of useful experience acquired by another, and this would enable Local Governments, while retaining complete control of their own industrial and technical education, to profit by the knowledge gained elsewhere."

In a later section of the Report, referring to the same matter, they state that "the majority of industrial schools can be grouped as metal working, textile and wood working schools, a division which would certainly require three experts for each province as inspectors, but it is fairly certain that no one province would be able to find full-time employment for so many men".

143. At first sight, we found this recommendation attractive, but after carefully considering it, we are not disposed to adopt it. Quite apart from possible constitutional difficulties, there is the fact that the area of India is so great and the time occupied in travelling would be so considerable, that inspectors attempting to cover the whole of the country would have insufficient time to devote to their proper work. Moreover, in the present circumstances, it is not only technical efficiency in the teaching that is needed, but also the growth of the right attitude towards training for industry and commerce. Accordingly,



we are convinced that the better plan is for each Province to employ its own inspecting officers, responsible to its own Department, and possessing, as the results of contact with the local industries and the outstanding persons controlling these, an intimate and detailed knowledge of local circumstances and conditions. It is only in this way, we believe, that the development of an effective system of vocational education can be fostered. We ought to record, in this connection, our sense of indebtedness to the officers of the Departments of Industries in both the Punjab and the United Provinces, for it was owing to their detailed knowledge of the industries, and the close relationships they have cultivated with industrialists, that we were enabled to learn as much as we did of the industrial conditions in these Provinces.

144. Machinery already exists for the transmission of useful experience from one Province to another, partly by means of the Bulletin which is issued regularly, and partly by that of the periodical conferences of the Directors of Industries of all the Provinces. The only suggestion for further action of this kind we wish to make is that Deputy Directors and Inspectors of Industrial Schools should be invited to be in attendance at these conferences.

*Industries for which the educational provision is small.*

145. Although, as we have said elsewhere, an industrial survey is necessary before a complete system of vocational education can be established in the Provinces, we ought to refer to certain branches of industry, for which the present provision appears to be inadequate. Amongst these is the building industry, for which there is, so far as we can learn, little provision. It is true that the Government School of Arts and Crafts at Lucknow has classes for architectural students, and that civil engineers can receive training at Roorkee; but in other countries it has been found of advantage to develop courses of instruction for men actually engaged in the building crafts, that is, masons, bricklayers and especially plumbers, on whom such a great responsibility for the efficiency of sanitation rests. We believe that it would be worth while to consider whether similar instruction would not serve a useful purpose in India also.

146. We were glad to learn that the University of Benares, in addition to its well-equipped department of Engineering, has now facilities for training men for both the glass and the pottery industries, which we hope will result in the supply of competent leaders for these important branches of manufacture. It is desirable that this training shall be associated in some way with the training of designers, since there is no doubt that the value of the products of the industries is greatly dependent on their artistic character.

147. In this connection reference may be made to the possibility of developing the cutting and engraving of glass as a cottage industry, as is done successfully in some parts of Czechoslovakia with the vigorous co-operation of the schools of art. The desirability of establishing schools for other artistic crafts, e.g., toymaking in the woodworking districts, should also be considered: this particular industry also is assisted by suitable school instruction in Czechoslovakia.

148. Another branch of industry for which only very small provision of technical education exists is printing, although this is carried on on a large

scale in Allahabad, where we had the opportunity of visiting two important works. Since the spread of knowledge and of culture depend to so great an extent on the efficiency and cheapness of printing, we hope that instruction for those engaged in this industry will before long be provided on a suitable scale. The existing methods of recruitment for the industry and some suggestions for their improvement are described in Chapter XI.

## CHAPTER IX.

### EDUCATION IN ART.

149. Nothing we have observed in the schools we have visited has disappointed us more than the general neglect of the teaching of art, especially as India has such a long tradition of artistic achievement. The country is filled with beautiful monuments; and the traditional dress, adornments and household utensils in common use shew that the people of India have inherited a high appreciation of form and colour. As a recent writer on India has said: "Dress, furniture, architecture, the fine arts and music, give ample scope for the expression and the enjoyment of beauty, and in this sphere India has much to give as well as to learn. It is perhaps of all spheres that in which direct transference is least to be desired. The Indian woman's dress stands out in pleasing contrast to that of her Western sister, in its simplicity, its grace and its almost unfailing charm of colour. Here would be a disastrous field for Westernising experiments."\*

There is, we believe, a risk that the artistic traditions of India will become enfeebled, as a visit to any bazaar or an examination of the costly wares displayed in the shop-windows of the larger towns will show. The cheap imported goods are often less beautiful than the products of India, and, as regards the expensive goods, there is a tendency, we understand, for wealthy people to demand furniture of the kind they have seen in the capitals of Europe or in the United States of America. While we believe that it would be a foolish policy to refuse altogether to be influenced by the West or the Far East, we are strongly of opinion that the artistic traditions of India should be maintained and strengthened, since they have their origin, like every other element of culture, in the life of the people of India herself. Physical science, dealing with materials and forces which are the same in one country as another, has no home peculiar to itself; it is universal and its laws are immutable, whether they are discovered in Europe or in Asia. Art is different, since although it has a general appeal to people of taste throughout the world, the forms it assumes have a very special appeal in those regions, and to those peoples to which they are native.

150. Quite apart from the cultural value of the development of the national art of a people—and we attach the greatest importance to this—there are other values which we are bound to mention, since our main reference is in respect of vocational education. If India is to utilise her natural resources for the material welfare of her population, she cannot afford to neglect any legitimate means of fostering her industries, and we are convinced that it would be wise to devote far greater attention to the artistic qualities of the goods she produces than she does at present.

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\* F. S. Marvin: *India and the West* p. 123.

*Art as a constituent of general education.*

151. The question of the teaching of art in the Middle and Higher Secondary schools has been dealt with in Part I of this Report. We may repeat here that the time devoted to this subject in these schools is, in our opinion, inadequate for the purpose of either arousing in the pupils any real appreciation of art, or of enabling them to develop any artistic gifts with which nature may have endowed them. The absence of systematic and well-planned instruction in art in the schools of general education handicaps the Schools of Arts and Crafts in their efforts to give a full training to their pupils. Moreover, it is probable that the neglect of instruction in art in the ordinary system of education leads to a waste of talent, since there is no effective means for discovering potential artistic ability.

*Schools of Arts and Crafts.*

156. We have visited the Mayo School of Arts and Crafts at Lahore and the Government School of Arts and Crafts at Lucknow. It is surprising that these two institutions should be considered adequate for the instruction in art of a population amounting in all, to close upon seventy-five million people.

*The Mayo School of Arts and Crafts* teaches the following subjects:—cabinet-making; lacquer work on wood; iron work; silver work; brass and copper work; gold and silver jewellery (including enamelling); modelling in clay and plaster of Paris; commercial printing; and fine art. The course in lacquer work is for two years only, while that in each of the other branches extends over three years.

In January 1937, the total number of students in all the Departments was 207. No student is admitted without submitting to a test of his ability, unless he has passed the final examination of one of the Industrial Schools of the Punjab, when he may enter without further examination the second year of one of the craft courses. The records of the Industrial Schools of the Province prepared for us shew that a considerable proportion of the pupils in these schools supplement their training by further studies at the Mayo School of Arts and Crafts.

157. Pupils who have had no previous experience of art are admitted to a Preparatory course, which extends over one year and prepares them for admission to one of the craft courses.

158. The Principal of the Mayo School is a distinguished artist. His staff includes hereditary, as well as trained craftsmen, but we understand that some of them have not had that good general education which is desirable for a teacher whose classes may include students whose education has been prolonged. The probable reason for this is that it has not been customary in the past for well-educated men to take up the practice of a craft.

We were glad to have the opportunity of seeing this school at work on two occasions.

159. The Government School of Arts and Crafts, Lucknow, teaches the following branches—fine art, drawing for reproduction, architectural design, art-printing (Litho and Process); goldsmith's work; silversmith's work; woodwork; iron work.

In addition to the instruction in these courses, which normally cover five years, there are special short courses for artisans who wish to improve their technique. The instruction in these includes:—Clay modelling; enamelling and engraving; metal casting; sculpture; wood carving; art-printing.

In January, 1937, there were 226 students following the ordinary courses; 15 undergoing a two years' course training for work as teachers; and 31 in attendance at the short courses for artisans. The number of students was thus 272 in all.

160. Like the Principal of the Mayo School of Arts and Crafts, the Principal of this school is an artist of high repute, while the members of his staff appear to have the same kind of qualifications as the craft teachers at the Mayo School of Arts and Crafts.

It was of interest to learn that, so far as could be ascertained, about 70 per cent. of the students of the school obtain employment immediately after the completion of their course.

161. While we were very favourably impressed by the quality of the work done in both these Schools of Art, we think that their spheres of influence could with advantage be enlarged considerably. In the first place, each of them is the obvious centre for the training of men who will be responsible for the teaching of art in the Middle and High Schools of their Provinces. There is, as we have said, a serious lack of instruction in this subject in these schools, and, until this defect is made good, the Schools of Arts and Crafts themselves will suffer from a dearth of well-educated students who, after a broad education in art, will give new life and inspiration in their several Provinces to that tradition of craftsmanship which appears likely to decay. It is true that there are at present fifteen students at Lucknow who are being trained as teachers; but this number is inadequate for the needs of a Province with a population of about fifty millions. The state of affairs in the Punjab is even less satisfactory, since there are at present no students undergoing this training.

In the second place, an effort should be made to improve the artistic side of the industries of India, and the Schools of Arts and Crafts are the obvious instruments for effecting this improvement. We are aware of the steps which have already been taken by the Department of Industries in the Punjab to improve the design of the cloth made on the hand-looms in that Province, and of the corresponding steps taken with the same end in view in the United Provinces; and the work done at both Amritsar and Benares appeared to us to be excellent and adapted for the purpose. We are, however, of opinion that, taking a long view, the tasks of both these Departments would be made easier if the design of cotton goods were brought into closer relationship with the Schools of Arts and Crafts in both Provinces. There is little doubt that those responsible for design in one material would be helped to retain their freshness and originality by working in association with others designing in other

materials. We hope therefore that it will be found possible to institute at both the Schools of Art courses of instruction in textile design of a really practical character. Some addition to the equipment of the schools would be necessary, but this would not be very costly, as excellent work could be done on suitable hand-loom.

162. The dearth of facilities for the study of art in both Provinces is a matter which appears to us to demand the most serious attention, since the existing schools are not within convenient reach of other large centres of population. It is true that the artistic side of production is not lost sight of in the Industrial Schools which are concerned with textiles and woodworking, for example; but we think that it would be of advantage to establish art schools—working in close contact with the existing Schools of Arts and Crafts, which are the major institutions—in other important centres of the Punjab and the United Provinces. The existence of the hosiery industry at Ludhiana and of the woodworking industry at Bareilly suggest that these two centres might be selected for the purpose of establishing such schools as experiments. If the experiments proved successful, other schools might be set up as opportunity served or the needs demanded, until there was a really effective system of art education in this part of Northern India, bringing benefit to its industries and thus to the population generally.

### *Museums.*

163. We understand that it is customary for many visitors from rural districts to use the opportunity of being in Lahore to see the collections in the Museum there, and, although we did not inquire as to this at Lucknow, this may be true about this Museum also. In view of the opportunities for the study of Indian art that these collections afford, and the interest already taken in them, we suggest that far greater use should be made of them than at present. This could be made possible by the gradual building up in each Province of a "Loan Collection" from which good examples could be lent to the Industrial and Technical Schools in the two Provinces. Colour photographs of textiles, of carpets, and of enamel or lacquer work could be included in the loan collection, and would undoubtedly serve the purpose of giving fresh ideas to craftsmen in places at a distance from the Museums themselves. We do not suggest that this should be started on any large scale, but only that a beginning should be made with the view of extending the scheme as was found practicable. We make this recommendation, as we have seen elsewhere the value of this method of extending the influence of Museums.

## CHAPTER X.

### PART-TIME SCHOOLS.

164. The schools we have described earlier are intended for pupils who have decided upon the careers they will follow, but have not yet entered employment. The provision of schools of this type is not, however, sufficient for the requirements of a manufacturing and trading community, since it assumes that when the formal education is completed, experience in the workshop or the office will give all the further training needed. This is not the case as regards

either apprentices to skilled crafts, or young men ambitious of promotion within the grade in which they start work or possibly to a higher grade. A skilled craftsman is all the better for understanding the principles underlying practice, while a young man aiming at promotion must necessarily gain further knowledge if he is to achieve his ambitions.

165. Every great industrial country organises a system of part-time education for its employed workers. This may be provided in—

(a) Evening technical or commercial schools.

(b) Day technical or commercial schools.

In the former case the youth gives up his own time to attendance at school after the end of his day's work ; in the latter case, he can only attend if he is released from work for the purpose.

In Great Britain, the great bulk of the part-time attendance is in the evening, though the number of employers who are willing to allow "time off" during the day is slowly increasing. In Czechoslovakia, the whole of the part-time instruction is provided before the hour of 6 P.M., and employers are under a legal obligation to permit of the attendance of their apprentices at school for not less than eight hours a week during at least two years, although it may be as many as four years. Whether instruction given during the day-time should be for a certain number of hours each week, or for continuous periods of some weeks or months, depends on the circumstances of the industry and of the school.

166. The MacLagan Engineering College at Lahore has now arranged that the most advanced students shall spend in the engineering workshops two out of the three vacations which occur during their course. The same plan is adopted at this college for the second group of students, who attend for five years and must, in order to qualify for the college certificate devote three months in each year to practical work in the shops.

This plan of alternating school and work in periods of months is undoubtedly of great value. It is known in Great Britain, where it has been adopted in a number of centres, as the "Sandwich system".

167. Although we have found instances in India of young workmen being allowed to absent themselves from work on Saturday mornings in order to attend school, we do not think that the practice is as frequent as is desirable. Experience elsewhere shews that very great benefit is derived from concurrent workshop experience and theoretical instruction. It has been found, for example, that a diligent student can, in three years of evening attendance at a technical school, reach the standard, in the subjects he studies, of the Intermediate examination for the pass degree in Engineering ; and that, in another two years, he can reach the standard in the subjects studied of the final pass examination for the degree. In order to do this, he must attend regularly for a total of about eight hours a week during rather more than half the year and, in addition, devote most of what spare time is left to him to private study and home work. Naturally, if he is set free to attend school during the day-time for one or two half-days a week, his task is far easier.

It is only the more able and persistent students who make great progress by evening attendance only, as the demands made on their physical energies

are considerable. For this reason, we hope that when part-time education in India is further developed, it will be mainly day-time instruction made possible through the co-operation of industry.

168. A number of questions arise when it is proposed to allow "time off" to students already in employment. For example, ought the concession to be made to all apprentices irrespective of their merits, or only to those who have shewn that they are worthy of it? What should be the amount of the release? Should it take the form of hours per week or of weeks per year? Should wages be paid for the time of attendance at school? Should students released for one or two half-days a week be expected to give up some of their own time to evening attendance?

We are of opinion, that, in general, only those students should be granted the privilege who have shewn by their industry and ability in ordinary everyday task; that they are worthy of assistance of this kind; that the time allowed to them should normally be two half-days a week; that it is fair to ask them to give up from their own time one evening a week, at any rate, to school attendance; and that the continuance of the privilege should always be conditional on their earning satisfactory reports both from the foreman who knows their daily work and from their teachers. As regards the payment of wages, we understand that it is usual for English employers to pay these for the time lost from work.

169. We have been interested to see that the Royal Commission on Labour in India, reporting in 1931, recommended that a few selected operatives in some industries should be provided with a "simple form of education" in working hours, as they considered that this would go far to solve the difficulty of obtaining suitable men for the lower supervisory grades.

The Commission had in mind the training of a rather lower grade of worker than we are discussing here, as they stress the need for general rather than technical education; but, from the present point of view, it is of interest to note that they recommended that at least three afternoons a week should be devoted to education, and that promising men should be given time off with pay. Incidentally, they went farther than we do by suggesting that it might be necessary for employers to assist in providing the education.

#### *Curricula of Part-time Schools.*

170. In drawing up curricula and syllabuses for part-time schools, it should be remembered that the students are already spending most of their time in practical work. What they need, as a rule, is not more work of this kind, but explanations of the "why" and "wherefore" of the operations they are engaged in, or see going on around them. The part-time school will usually devote its attention almost wholly, so far as industry is concerned, to teaching mathematics and those branches of science on which the practice of industry is based. At the same time, it may be necessary in some instances to provide classes in practical subjects, when a method of working, new to a district, is being introduced into the local works. It would be reasonable, for example, to provide part-time classes in electric or acetylene welding in an area where these had not been practised previously. In such instances, however, attention should always be paid to explaining the theoretical side of the operation.

Examples of curricula and syllabuses which have been found suitable for use in part-time schools by pupils already in employment are given in Appendix IV.

### *Evening Attendance at Part-time Schools.*

171. Although we have urged the provision of part-time education during the day rather than the evening, there are circumstances in which evening attendance is appropriate. There are in the greater towns of India large numbers of men working at crafts on their own account, who might find difficulty in giving up much of their working time to attendance at classes. Amongst these are the men engaged in artistic crafts, and we see no reason why special evening classes should not be organised for them within the Schools of Art, where they would not only learn the best methods of manipulation, but would also have the opportunity of improving their knowledge of design.

### *Premises of Part-time Schools: Staffing.*

172. We do not contemplate that "part-time" schools should be carried on in buildings of their own, but that they should, as in Europe, be held in the same premises and make use of the same equipment as the "full-time" schools. We are aware that difficulties occasionally arise when two sets of students have to use, at different times, the same laboratories and drawing offices. It would, however, be wasteful to duplicate these, and the difficulties can usually be readily overcome by having one principal for both institutions, especially if he is endowed with tact.

173. The staff for full-time work can often be supplemented with advantage by specialists from outside, who may not be professional teachers, but are willing to teach for a few hours a week. It is true that these men are often less skilful as teachers than their professional colleagues, but what they lack in skill is made up by the realistic atmosphere they bring into the classroom.

## CHAPTER XI.

### RECRUITMENT FOR EMPLOYMENT IN CERTAIN INDUSTRIES.

174. Although we have confined ourselves in the main to describing a frame-work for vocational education, since no special surveys of the requirements of industry and commerce have been made, we are able to make some suggestions with regard to the recruitment and training of young men for several important branches of industry, whose circumstances could be learned without such a survey.

First among these is the railway service, which is able to prescribe the qualifications and the kind of training needed by the large numbers of youths entering it, even though its field of recruitment covers a very wide area; exactly the same applies to the Public Works Department; and we have had the opportunity of consulting officers of the railway service, and of seeing the prospectuses descriptive of the method of recruiting future officials of the Public Works Department.



As regards the printing industry, so much of it is concentrated at Allahabad, that information as to its present means of recruiting and training was conveniently obtained.

### *The Railway Service.*

175. According to the Report of the Royal Commission on Labour in India, the total mileage of the Indian Railways is in excess of that in any other country save the United States of America. With a total staff of over 800,000, the railway administrations are the largest employers of organised labour in India. At the present time, 72 per cent. of the total mileage is owned, and 45 per cent. is directly managed, by the State, through the Railway Board constituted in 1905 and re-organised in 1922. "This Board is directly responsible to the Government of India for the State-owned railways managed by the State, and has complete administrative authority over the general managers or agents of these railways, to whom considerable powers have been delegated. Within the grants at their disposal, the agents are competent to create most of the higher subordinate and all the lower posts and to grant additional pay to individuals; they have also full control over the non-pensionable subordinate establishment in matters of appointment, promotions, etc." It is clear from the immense size of the railway undertakings, as described in the Report of the Royal Commission, that their policy as regards working conditions is bound to react to some extent on the conditions in other branches of industry: and this furnishes an excellent reason for planning carefully the conditions of recruitment in this industry.

In our inquiry, we are concerned with only the method of recruiting and training the members of the employed staff; and in regard to this we received information from the responsible members of the staffs at Lahore and Lucknow, to whom we wish to express our thanks for the pains they took to provide it.

### *The Mechanical Engineering Departments.*

176. The North Western Railway, which has a mileage of 7,000 and employs over 100,000 persons, has large engineering workshops at Lahore. It recruits for positions below the highest grade, three classes of youths:—

- (a) Apprentices to engineering, whose entrance qualification is the possession of a matriculation certificate. These serve a five-year course, working in the shops for nine months in the year and spending the other three months at the MacLagan College of Engineering. When they complete their terms of apprenticeship, they become, first, improvers and then journeymen, after which they may be promoted to the grade of chargehand and finally to that of foreman.
- (b) Trade apprentices, who after finishing their apprenticeship, become improvers and are afterwards graded as skilled artisans; some of them may become later on "mistris" or junior chargehands.
- (c) Coolies, who are either unskilled or semi-skilled workers.

We understand that there is no transfer from one grade to another.

177. The conditions of admission to trade apprenticeship were of particular interest to us, as they prescribe that a boy shall have reached Class VI of the Middle School and shall be between the ages of 15 and 18. In our opinion, this scheme has the defect that a really intelligent boy ought to have reached Class VI by the age of about 13, but, being still too young for admission to employment in the railway engineering shops would have to spend two years or so waiting for this. Accordingly, it seems unlikely that the service will secure the best type of recruits, in spite of the prospects it holds out to boys of ability.

178. From the inquiries we made of an official of the East Indian Railway at Lucknow, we learned that the conditions of entrance for trade apprentices on this system are very like those existing at Lahore, the limits of age (15—18) being the same, though the exact standard reached in the school attended is not definitely laid down.

179. We suggest that the authorities of the railways shall consider the advisability of modifying the conditions of recruitment for both ordinary and trade apprentices, it indeed they do not abolish ultimately the distinction now existing between the two classes.

This could be done by arranging with the Provincial Governments concerned for the setting up of Junior Technical Schools in each important railway centre which possesses workshops of sufficient size, and by the Railway Board, through their agents, prescribing that entrance to employment in these shops shall be open, not only to boys holding a matriculation certificate, but also to those who have passed with credit through these schools. We know of no more effective preparation, either for skilled craftsmen or for foremen and charge-hands, than that afforded by schools of this type. Necessarily, the change we suggest could not be carried out quickly, as time would be needed for the schools to be established and for them to find their footing. In the meantime, the important step of raising the standard of admission to trade apprenticeship from Class VI to Class VIII could be taken, not only for the sake of improving the qualifications of the recruits to skilled work, but in order to indicate to parents and others that changes of importance in the mode of recruitment were impending.

#### *Other Departments of Railway Service.*

180. The North Western Railway possesses at Lahore an extremely well-equipped institution—the Walton Training School—for training candidates for employment in (a) commerce and transportation, and (b) work concerned with the permanent-way, with signals and interlocking, and with bridges. In addition to these, it conducts short “refresher” courses for persons already in the service of the railway.

The qualification for admission to the courses for recruits is, in general, the matriculation examination of an Indian university, though the Junior Cambridge Local examination will be accepted for this purpose as its equivalent. In some cases, e.g., candidates for employment as guards, it is much higher, Class I, Grade I guards being expected to have passed Intermediate Science or Arts, while Class I, Grade II guards must have passed B.A. or B.Sc.

Candidates for employment in the commercial and transport section must be between 18 and 21 years of age on admission, with the exception that boy-firemen will be admitted between the ages of 16 and 21, while guards must be between 18 and 24, or between 18 and 30, according to the grade they wish to enter.

Candidates for employment in the permanent-way, signal and interlocking and bridge sections must be between 17 and 21 years of age.

181. After visiting the Walton School, with whose work we were greatly impressed, and after discussion with its principal, we have reached the conclusion that entrance to those courses of training which admit boys of 16 or 17 and include an engineering element should be open to boys who have passed with credit through a Junior Technical School: and that entrance to those courses of training for boys admitted at the age of 18, which possess a commercial element, should similarly be open to boys who have satisfactorily completed the course of a Senior Commercial School.

182. We have dealt at some length with the method of recruitment to the railway service, and made suggestions for its modification for two reasons. In the first place, we believe that the Junior and Senior Vocational Schools, when once they had settled down to their task, would supply annually a more suitable type of recruit than is possible under the existing conditions.

In the second place, a fairly constant demand by the railway service for boys educated in these schools would do much to make it really worth while for the Government Departments concerned to establish vocational schools in the important railway centres, as they would be sure of having a nucleus of pupils in them who were candidates for employment in the railway service. We are confident that as the schools became better known, they would be appreciated by persons in other industries, since the great need of organised industry in India, as in other countries, is that for skilled craftsmen and competent foremen: and there is, as yet, no organised method of recruiting and training them which is comparable with the methods employed in European countries.

#### *The Public Works Department.*

183. As we had not the opportunity of visiting the Thomason College of Civil Engineering at Roorkee (United Provinces) or the Government School of Engineering at Rasul (Punjab), we inquired as to the conditions of entrance to these institutions. We learned that for the "Overseer" class at Roorkee, candidates must be between the ages of 16 and 21, and must, before being admitted to the competitive examination for entrance, have passed the matriculation examination of the Allahabad university or an equivalent examination.

The entrance examination requires a knowledge of English and the vernacular, arithmetic, algebra, geometry, drawing and Hindustani.

184. The conditions of entrance to the "Overseer and Draftsman classes" of the School of Engineering at Rasul are very similar, but the age limits are 17 and 21.

We suggest that, as in the case of the railway service, arrangements shall be made, as soon as this becomes feasible, for candidates for admission to either of these institutions to offer a certificate indicating the satisfactory completion of the Junior Technical School course, as equivalent for this purpose to a matriculation certificate. This change would not affect the present requirements except by the addition of a fresh type of preliminary education to those already recognised.

### *The Printing Industry.*

185. The printing industry is highly localised in the United Provinces, there being several large private presses and an important Government press at Allahabad. We had the opportunity of visiting two of these, as well as the printing school carried on by the Church Missionary Society at Sikandra which is, so far as we could learn, the only institution in the Province which provides instruction in typography, although litho draughtsmen have been trained at the Thomason School of Engineering, and there is a class for lithography and process-block making at the School of Arts and Crafts at Lucknow. We are of opinion that there is ample scope for the establishment of a school of printing at Allahabad, especially as it has been found desirable in the past for Indians to go to England to follow the courses at the London School of Printing in order to receive their training.

186. At the present time, there is no definite method of recruitment to the various branches of the printing industry in the United Provinces. Compositors usually begin as type distributors, and, although the bulk of the work is in English, it is rare for them to have any great knowledge of that language. Linotype and monotype keyboard operators are usually recruited from the more intelligent compositors, but it has been found that clerks who have had experience of the typewriter, supplemented by some training as compositors, make suitable operators. The machinemen engaged as letterpress and lithographic printers have often entered the industry as labourers and machine assistants, while the bookbinders have started as folders, paste boys or as workers in other routine tasks. The supervisors have usually been selected from amongst those workmen who shew capacity for control, have a reasonably sound knowledge of the process, and possess sufficient knowledge of English to enable them to follow intelligently the instructions on the work docket.

187. In considering the grade and type of technical school to be established, it is necessary to take into account the circumstance that the letterpress printer must have an adequate knowledge of English; if it were not for this requirement, we should recommend that the school should be of the Junior Technical School type. As it is, we see no alternative to its being of the Senior type, which admits boys from the High Schools who have learned English.

188. There is another important factor. Since the training is narrowly vocational, a pupil entering the course must have something like an assured prospect of employment when he has completed the course. In London, this is made certain by the boy being indentured as an apprentice to a firm before he is admitted as a "trainee" to the London School of Printing. We understand that there is no system of apprenticeship in the printing

industry in India, but we think that every firm in the area should undertake to give employment to a specified number of boys who complete the course satisfactorily.

### *The Printing School.*

189. The course in the printing school should normally occupy not less than three years, during the first of which general education, including art, should occupy half the available time, though this proportion might be diminished during the later years.

Instruction should ultimately be planned to meet the needs of:—

- (a) Hand compositors.
- (b) Machine compositors.
- (c) Letterpress machine workers.
- (d) Lithographic printers.
- (e) Process engravers.

At the start, it would probably be sufficient to provide instruction for the first three of these, leaving lithography and process engraving to be added when the school was firmly established.

In the first year of the course, every pupil who is to be engaged in typography should be taught hand composing, even though he will never be called upon to do this in his ordinary work, since it is of great importance that he should have a good knowledge of lay-out, and this is best obtained by hand work. It is indeed a general rule in every industry that a machine worker will benefit by learning to do by hand what the machine does more exactly and more expeditiously, and the printing industry is no exception to this.

190. The school should possess one or two well chosen faces of type of good design in a wide range of sizes, and several small founts of good type in a few sizes only for comparative purposes. It should be equipped with at least one composing machine, as well as a number of dummy keyboards, and should possess hand presses. It is of importance, however, that the students should learn to work under commercial conditions with modern equipment, and accordingly it is suggested that during the two later years of the course, arrangements should be made for them to work for three or more half-days in the week, or even as much as half their time in the printing works in which they will be employed on the completion of their course. We realise that this involves the firms concerned in some re-organisation of certain portions of their works, but we have little doubt that they will be willing to go to some trouble to secure the better training of their staffs.

191. It is not usually practicable in a works to grade very carefully the instruction in the ordinary operations, and for this reason the practical work in the early stages of the teaching of composition should consist of exercises in plain setting, with special reference to spacing and justification, proofing, correcting and distributing; these should be followed by exercises in a large variety of jobbing work, including commercial and advertisement work and intricate tabular work. In the third year of the course, pupils should be given some knowledge of costing and estimating.

## CHAPTER XII.

## THE TRAINING OF VOCATIONAL TEACHERS.

192. Since India has so little experience of vocational education, special arrangements for the training of the teachers to be engaged in this branch of education are necessary. The present training colleges have throughout their existence devoted their attention to fitting young men for work in schools which provide either general education only, or education with a bias towards rural pursuits. The teachers in vocational schools must, however, have a different outlook; their pupils have narrowed their educational aims by defining them; and the teaching must have full regard to this cardinal fact. We do not suggest that the teachers should limit their own outlook. On the contrary, they must continue to take the widest possible view of their responsibilities, since they are to guide their pupils to equip themselves for life as well as for livelihood: but this view must also be a long one, stretching beyond the school and including more than a glimpse into the world of industry and commerce.

193. A vocational teacher must have pedagogic knowledge and skill; he ought to be able to interpret a syllabus laid down for him, even if he has not the gift of being able to draw up a good syllabus for himself; he must be able to handle a class and to interest his pupils; and he must be familiar with the ordinary routine of a school. It is precisely this kind of equipment for his task that a training college can give him. Accordingly we are of opinion that the existing training colleges can be used with advantage for the earlier part of the training of vocational teachers.

194. This equipment is, however, not enough for a man who has to prepare pupils for industrial or commercial life. He must have a thorough knowledge of the subjects which he proposes to teach, and of the best way of presenting them to his pupils, remembering always that the connection between theory and practice must be maintained by the choice of examples and illustrations from industrial or commercial practice. For example, the teaching of mathematics should include calculations which arise in actual works practice; and in the teaching of the principles of geometrical projection, simple machine details, or examples of simple structures of wood, should be used as models, while the value of the ability to make a dimensioned hand-sketch of a machine detail should not be forgotten.

195. The vocational teacher should also have had opportunities of visiting works, preferably in a small party rather than as a member of a crowd, and should have read books, as well as attended lectures, descriptive of the general organisation of the industries into which his pupils will enter.

196. The course in the ordinary training college must therefore be supplemented by some other institution which devotes special attention to this essential element in the training of a vocational teacher and gives him the necessary outlook and knowledge. This institution should work in close connection with the training college from which its students come.

*The Vocational Training College.*

198. The vocational training college—if we may so term it—should be accommodated in the same premises as a technical school, which would serve as a practising school for it. The demand for vocationally trained teachers will for some time be small, and it is probable that a single institution of the kind we have in mind would meet for a number of years the needs of the three Provinces of Delhi, the Punjab and the United Provinces.

199. We suggest therefore that the Government of India should establish such an institution at Delhi, and should invite the Government of each of the two neighbouring Provinces to entrust to one of their ordinary training colleges the task of co-operating with it. Admission to the vocational training college should be confined to men who had already received a general training in pedagogy at the associated provincial training college and had shewn their fitness for vocational teaching. In the first instance, not more than ten or twelve such men should be selected, although this number might be increased if later experience proved that this was desirable.

200. Teachers in training would be instructed in the methods of teaching science and technology; they would act as assistants to the regular members of the staff of the technical school, serving as demonstrators in the laboratories and workshops, and sometimes themselves taking classes under the supervision of either the principal of the whole institution or of a senior member of his staff.

It is estimated that a six months course would suffice for this part of the training.

*The teachers in training.*

201. The teachers selected for vocational training should, as a rule, possess degrees in science, and a start should be made with those who have had a course of engineering training, since they would have had some workshop experience and would be acquainted with most of the fundamental subjects taught in the technical school. All of them should be chosen after an interview, as it is important that they should have the right kind of interests and outlook, and this is best ascertained by oral discussion with them.

202. Some of the teachers of “technological subjects” such as textiles, would necessarily have very different qualifications. It would not be practicable to arrange for these to spend any time at the ordinary training college, but a six months course at the vocational training college would undoubtedly increase their fitness for their work.

*The Technical School.*

203. A pressing need in Delhi, which has not yet had a technical school of any kind, is for an efficient Junior Technical School of the type described in Chapter VI. We recommend that the establishment of this should be the first step taken. As soon as it has become a stable institution, it would be possible to extend its activities by the provision of facilities for the teaching of art and the training of craftsmen. It should also serve the needs of persons already in employment by conducting a variety of part-time classes, and would thus constitute what is often known as a “polytechnic” institution.

Such a school, if it is to serve its purpose fully, should develop a strong corporate life through the setting up of clubs and societies amongst its students; but this development should not be forced or imposed from without.

It is this institution with which the Vocational Training College should be associated.

### *Staffing.*

204. The principal of the institution should be responsible for the organisation and supervision of the whole of the work carried on within it. In view of the need for entrusting it to a man with wide experience of vocational education, we recommend that the first principal shall be an engineer, who possesses a good degree, has had sound workshop training and has gained experience in a large English technical school which carries on both a Junior Technical School and part-time classes. His engagement should be for a minimum period of five years, since he must have time, first, to plan the work of the institution to suit Indian conditions, and, second, to see at least one generation of pupils complete the course of instruction of the Junior Technical School.

205. The members of the staff responsible for the teaching of science, mathematics, technical drawing and workshop practice should have been trained at such institutions as the MacLagan Engineering College at Lahore, the Engineering Department of the Hindu University of Benares or in the case of the teacher of woodwork, at either the Central Woodworking Institute at Bareilly or the Government Woodworking School at Allahabad.

It is important that the teacher of English should have a good colloquial acquaintance with the language, but he need not necessarily have studied the niceties of the style of English authors.

### *The Junior Technical School.*

206. During the first two years of its course, the Junior Technical School would follow the general lines laid down for schools of this type in Chapter VI. In the first year, however, the practical workshop instruction would be in woodwork, while in the second year the exercises would be in metal work.

207. Boys attending for the third year would be divided into three groups in accordance with the requirements of their future occupation. The branches of instruction would be :—

#### *(a) General Engineering Practice—*

The aim of this course would be to train mistris for garage work, fitters for textile factories, and other skilled craftsmen employed in the ordinary maintenance and repair of machinery.

#### *(b) Electric Wiring—*

This branch is one of increasing importance, since the use of electricity for industrial and domestic purposes is developing rapidly in the Provinces we have visited.



(c) *Cotton Spinning and Cotton Weaving—*

The aim of this course in the Junior Technical School should be to train jobbers, overlookers and others with similar responsibilities.

208. Although it is suggested that, in the first instance, these specialised courses, superimposed on the more general vocational course given in the first two years of the Junior Technical School, should occupy only one year, it might be found necessary in the future to extend them to two years. This extension should not be made without very full consideration of the circumstances, since it is necessary, in the interests of the pupils, that they shall not delay unduly their entrance to employment. In most instances, they would derive greater benefit, we believe, by continuing their education in part-time classes than by prolonging their full-time education.

*Admission to the Junior Technical School.*

209. The Junior Technical School should admit annually not more than 20 pupils, who have passed the First Public examination at the end of Class VIII and have not yet attained the age of  $15\frac{1}{2}$ . This age limit should, however, be lowered to  $14\frac{1}{2}$ , or possibly even 14, as the efficiency of the educational system increases.

*Accommodation and Equipment.*

210. We have visited the premises of the Government High School in Delhi, which seems to us suitable for the joint use of a Technical School and Vocational Training College, if the necessary alterations and additions to its accommodation are made. It is conveniently situated and possesses 20 classrooms, 3 of which have an area of more than 1,100 sq. ft., good playing fields, a small hostel, a swimming bath and ample space for any additions that may be required. There is on the same site a Commercial School, which ought to be regarded as part of the complete institution.

Substantial new accommodation and equipment would be needed if, as is desirable, the teaching of textiles were to be undertaken. We have however, reason to believe that any good scheme for instruction in this subject would be considered very sympathetically by leaders of the local textile industry.

## CHAPTER XIII.

### VOCATIONAL GUIDANCE AND SELECTION.

211. The choice of the career which he shall follow is one of the most momentous decisions made by every young man, and it is of importance that he shall have all the help possible when the time comes for making it. As we know, it is very frequently made without any proper regard being paid to the likes, dislikes, aptitudes and inclinations of the individual, and with little consideration of the prospects which the career can hold out to him. Chance and local circumstances are the deciding factors in too many instances, with the inevitable result that, in every country, there are multitudes of "misfits"

in both industry and commerce, doing work uncongenial to them and very often therefore doing it rather badly.

In view of facts like this, a great deal of attention has been paid, both in European countries and in the United States of America, to what are known as "vocational guidance" and "vocational selection". The establishment of organisations for the systematic employment of methods of ensuring that young persons shall enter occupations for which they are best fitted is of somewhat more recent growth in Australia, South Africa, Japan, and two or three great cities in China, but in these countries also steps have been taken with this end in view.

212. It is obvious that the guidance of a boy or girl into an occupation for which he or she is suitable depends on—

- (a) an ascertainment of both the personal qualities and the knowledge needed for efficient work in each occupation which is available to the members of the group of young persons for whom vocational guidance is desired,
- (b) an ascertainment of the qualities, that is, the interests, aptitudes, inclinations and abilities of the individuals constituting the group,
- (c) machinery for relating the qualities of each individual to the qualities needed for success in the occupation.

It is all the more important that a youth shall receive vocational guidance when it is proposed that he shall devote some years of his life to attendance at a vocational school before he actually enters employment, since the teacher in the school may be far more reluctant to tell him that he has chosen the wrong career than an employer will be, when he finds that he is called upon to pay wages to a youth who is neither competent, nor likely to become competent, at his task.

213. Although progress has been made in many countries in the direction of determining vocational suitability, we are not convinced that the investigations have yet reached the point at which their results are of general applicability; they can, however, be applied with confidence over a limited portion of the field. In France, where the study of vocational guidance has been pursued with great energy, it is usual for the trade schools to rely partly on tests of vocational aptitude, and partly on the test of practical experience in the workshop. When a boy enters one of the trade schools carried on in Paris, he is set to work in a particular branch for some weeks, and his progress is carefully watched. If he is found unfitted for it, he is transferred to another branch. This method of supplementing initial tests of suitability by the results of actual experience appears to us, in the present state of knowledge, to be a sound plan, and one which might be followed with advantage in the vocational schools of India.

214. Vocational selection differs from vocational guidance, since it is concerned with the choice of the most suitable candidate amongst a number of persons presenting themselves for employment in a particular kind of work. A number of great undertakings, such, for example, as those engaged in transport, have organised methods of testing candidates for posts as motor-drivers

or engine-drivers. A motor-driver ought to have good eye-sight, an ability to estimate speeds and distances, rapid reaction to external visual stimuli, and the habit of concentrating his attention without fatigue on his task. Although these characteristics are such as can easily be ascertained, it is not so easy to determine what are the exact characteristics to be looked for in an administrator, who carries high responsibility for maintaining personal relationships with others, and at the same time, has to deal with important impersonal matters. There is no doubt, however, that the results of the work now being done by skilled investigators through the world will ultimately result in the development of effective methods, applicable over a very wide field, of both vocational guidance and vocational selection.

In the meantime, it should be remembered that the number of trained men, accustomed to the investigation of vocational aptitudes, is not great in any country. This is no reason why a study of the subject should not be started in India, either by men trained in other countries, or by Indians who have been given the opportunity of investigating the methods in use overseas.

215. We have noted with interest the statement presented by Dr. Charles Myers, Principal of the National Institute of Industrial Psychology in London to the Committee on Unemployment in the United Provinces presided over by the Right Hon'ble Sir Tej Bahadur Sapru. Dr. Myers says: "The Institute considers that an attempt may well be made to formulate a scheme whereby its procedure may be adapted to Indian needs. It suggests that experienced members of its staff should be charged with the duty of preparing, in consultation with the Indian authorities concerned, a scheme for the training of both men and women in the Institute's technique. This scheme could be carried into effect either in India or in England. The scheme would cover—

- (1) training in the selection of children for secondary education ;
- (2) training in the selection of adolescents for university education ;
- (3) training in the vocational guidance of undergraduates and graduates.

The persons selected to receive such training should be of a high degree of intelligence, they should be capable of establishing easily and quickly a friendly relationship with those they are called upon to advise, they should be patient, and they should have wide sympathies and be free from extreme views. They should also be capable of instructing others, both by group and individual teaching methods, in their technique, but their interests should not be predominantly academic."

216. In our view, this statement summarises fully and with clarity the qualifications of those persons who may undertake the task of advancing in India the knowledge of the methods of vocational guidance and selection, and of applying this knowledge to useful ends. The problem is, however, too complex to be attacked successfully by any one Province, and if, as we hope, an attempt is made to contribute to its solution in India, it seems desirable that a number of the Provinces of India should co-operate together for the purpose.

*Advice on Careers.*

217. The Unemployment Committee of the United Provinces recommended that the Government should undertake the publication of a series of pamphlets describing careers for boys, as is done by the Ministry of Labour in England. The pamphlets describe the preliminary education needed for each career, the method of entering upon it, the prospects and the means of obtaining further education relating to it. They serve an extremely useful purpose in England and we endorse the recommendation of the Unemployment Committee fully.

## CHAPTER XIV.

## SUMMARY AND RECOMMENDATIONS.

*Chapter I.*

1. Large-scale industries require an adequate supply of men specially trained for the responsible posts in them. It cannot be expected, however, that men will undergo training for work in these industries unless they see a reasonable prospect of suitable employment. The expansion of vocational education should therefore not greatly outstrip the development of industry. (Sections 2-3.)

2. If, however, vocational education is not too specialised and if it aims at cultivating flexibility of mind and certain personal qualities which are as much moral as intellectual, industry and commerce should be able to absorb a somewhat larger proportion of trained men than an exact computation of their existing needs would appear to justify. (Section 4.)

3. Every province should make a survey of the educational needs of its industries and commerce and thus determine the types of vocational education to be provided, the stage to which each type should be carried, and especially the number of recruits that can be absorbed annually. Until such a survey has been made, it is impossible to do more than prepare an educational framework into which vocational Schools and courses of instruction can be fitted. (Section 5.)

*Chapter II.*

4. Vocational education is not on a lower plane than literary education, since the full purpose of education is to develop the whole powers of the mind, body and spirit so that they may be devoted to the welfare of the society. (Section 6.)

5. No country can develop its trade and industry through the work of second rate men only. The conditions in India, as in other industrial countries, demand that business shall have its fair share of the best brains available in the country. (Section 7.)

6. General and vocational education are not essentially different branches, but the earlier and later phases of a continuous process. Each subject in the vocational school has its origin in the non-vocational school. (Sections 8-9.)

7. General and vocational education should not, however, be provided in the same school, since the pupils in the two types have very diverse aims. Education for industry can, with certain safeguards, be given in the same school as education for commerce. (Sections 10-11.)

8. Vocational education is not a matter for the school alone, since it is a specific, and not a general, preparation for employment. Industry and commerce must co-operate with educational organisations if the vocational education provided is to be appropriate and adequate. Organised co-operation of this kind does not yet exist in India. (Sections 12-13.)

9. There appears to be a common belief in India that a more adequate supply of vocational education would lead quickly to greater use being made by organised industry of the raw materials of the country. The existence of skilled workers, though essential, is not in itself enough to create organised industries. Capital, means of transport and reasonably assured markets are also needed. Although a certain degree of caution in the plans for training men for organised industry is therefore necessary, schemes for improving the skill and efficiency of cultivators and small-scale workers can be safely undertaken. (Sections 14-15.)

### *Chapter III.*

10. The problem of improving the lot of the villager is formidable. The population consists mainly of small holders : the villages are generally isolated from one another and from towns : the cultivators are mostly illiterate : and they are reluctant to abandon old customs and to adopt new methods. (Section 16.)

11. There is little possibility of a cultivator becoming a successful small-scale worker, though the village artisan might be trained to repair and refit agricultural implements. (Section 17.)

12. The small-scale workers may be divided into (a) those who compete with organised industry : (b) those who carry on hand-crafts even when employed in organised industry. The former need better appliances and the ability to use them ; the latter are dependent mainly on their personal skill. Both classes need better training than is yet available. (Section 18.)

13. Manufacture on the small scale is very prevalent in India. Even if organised industry expands greatly in India, there will still be room for the small-scale manufacture of (a) goods needed in small quantities, (b) goods which demand an individuality of their own. If the progress of organised industry is not to displace the small-scale worker, he must have the opportunity of adapting himself to changing conditions ; and immediate steps to this end are necessary. Greater attention must be paid to his training, and especially to his training in art where this is appropriate. (Sections 19-20.)

14. Organised industries can be divided into (a) " manipulative ", i.e., those in which large practical experience is needed by the supervisor, and (b) " non-manipulative " in which, on account of the simplicity of the plant or of the process, the necessary knowledge can be acquired more quickly. (Section 21.)

15. The size of each industrial unit of organised industry in India is usually far larger than it is in Western countries. (Section 22.)

16. In general there are three grades of workers in organised industry ; (a) the directing and managing grade, (b) the supervisory grade, and (c) the operative grade. The proportion of persons of the directing and managing grade in India is smaller than in Western countries, and many of them have been educated outside India. There is no great demand for an immediate and considerable increase in the facilities for the vocational education of the members of this group, but the matter should be kept under continual review. The existing institutions providing vocational education of an advanced grade are doing excellent work, and are capable of rapid expansion when the need arises. (Sections 23, 24.)

17. It is the supervisory grade, *i.e.*, foremen, chargehands and similar workers, on whose education and training great attention should be concentrated at this stage in the development of organised industry in India, since they hold the key to efficiency in production. (Section 25.)

18. Full-time vocational schools can do little for training the operative grade of workers, except those engaged in the maintenance of the mechanical plant. (Section 26.)

19. It is important that in any scheme of vocational training for industry opportunities should be provided for ambitious and capable men to equip themselves for promotion. (Section 28.)

20. The workers in commerce can be divided into (a) merchants and industrialists carrying on transactions on their own account, (b) professional men engaged in the practice of banking, law, insurance, etc., (c) clerical workers engaged in recording the transactions of others. (Section 31.)

#### *Chapter IV.*

21. Effective machinery should be established for securing close and regular co-operation between industry and commerce, on the one hand, and education, on the other. This can be secured by the establishment in each Province of a Government Advisory Council for Vocational Education, which would include the Director of Public Instruction, the Director of Industries, and two or three Principals of important vocational schools ; on the side of business, it would include four or five businessmen selected by the Government on account of their knowledge and experience of particular branches of business, and not because they represented special interests.

The Advisory Council for Vocational Education would appoint Advisory Sub-Committees dealing respectively with education for : (a) Engineering ; (b) The textile industries ; (c) Agriculture ; (d) Small-scale and cottage industries ; (e) Other industries of major importance ; (f) Commerce. (Sections 32, 38, 39.)

22. The functions of Advisory Sub-Committees would be to draft curricula and syllabuses of instruction, to advise on equipment, to suggest where schools should be established, to visit the schools regularly, and generally to do all in their power to make their branch of vocational education successful. (Section 40.)

23. Employers can help in the development of vocational education in other ways—by providing buildings, equipment, materials and funds. All these forms of assistance are frequent in Europe. (Sections 43, 44, 45, 46, 47.)

### *Chapter V.*

24. Vocational schools should be classified according to :—

- (a) Their standard of admission : and
- (b) The precise vocational aim of the instruction they give. (Section 49.)

25. Vocational education must be based on an adequate general education. The entrance standard should not, as a rule, be below that reached at the end of the Middle School (Class VIII). Pupils who have reached this can be admitted to “ Junior Vocational Schools ”. Pupils who have successfully completed the Higher Secondary School course can be admitted to “ Senior Vocational Schools ”. (Sections 50, 51, 52.)

26. Full-time vocational schools fall into three types :—

- (a) Those which impart a vocational bias to their curricula during the last year or two of school life.
- (b) Those which prepare their pupils for work in an occupation to be selected at the end of the course from a range of related occupations. These are “ Pre-apprenticeship ” schools.
- (c) Schools which prepare their pupils for a specified occupation. These are “ Apprenticeship ” schools, and are sometimes known as “ Trade schools ”. (Section 55.)

27. Schools which impart a bias to their curriculum are usually preparing their pupils for commerce. It is suggested that their general establishment in India should be postponed until the educational reconstruction now proposed is approaching completion ; but this suggestion does not apply to schools with a bias towards agriculture. (Sections 56, 57.)

28. The Junior Vocational School, receiving its pupils at the end of Class VIII and providing a three years course, would be parallel to the Higher Secondary School, and should be held in the same repute.

The Senior Vocational School, receiving its pupils at the end of Class XI and providing a two years course, would be parallel to the existing “ Intermediate Colleges ”. (Sections 58, 59, 60, 61.)

29. Although the Junior Vocational Schools would lead either directly to employment or to further training in an Industrial School, a few of their pupils might wish to proceed to Senior Vocational Schools. In these instances, the “ leaving Certificate ” of the Junior Vocational School should be regarded as equivalent, for this purpose, to the certificate of matriculation. (Section 64.)

30. Part-time schools should be provided for the further education of young men already in employment and, if possible, the classes should be held in the day time, the students being released by their employers for two half days a week in order that they might attend. (Section 65.)

31. It is recommended that pupils satisfactorily completing the courses in vocational schools shall be awarded "leaving certificates"; and that these shall testify, not only to the success obtained in the final examination, but also to the quality of the work done throughout the course. This involves keeping a record for each pupil shewing (a) his percentage of attendance, and (b) his marks for work done in the class room, the workshop, the laboratory, and at home throughout the whole of his course. (Section 68.)

32. Vocational education should be administered by the Department of Public Instruction, and until it has become stabilised, the schools providing it should be maintained and controlled by the Governments themselves and not by voluntary bodies aided by grants. (Section 70.)

### *Chapter VI.*

33. A limited number of Higher Secondary schools should have a bias towards the needs of agriculture throughout their curriculum, which should be a continuation of that of the Rural Middle School. (Section 73.)

34. The type of Junior Vocational School which appears to be most necessary in India is the "Junior Technical School", which gives a training, preliminary to employment in industries of the "manipulative" variety, suitable for boys who aim at becoming highly skilled artisans and foremen. (Sections 77, 78.)

35. The type of Senior Vocational School which appears to be most suitable is the "Senior Technical School", which prepares its pupils for responsible posts in industries of the "non-manipulative" variety. (Section 79.)

36. Junior and Senior Technical Schools are appropriate in industrial centres only and should not be established, as a rule, in areas with a population smaller than 50,000.

37. The curriculum of the Junior Technical School should include mathematics, the scientific principles underlying the practice of the workshop, technical drawing, workshop practice in wood and metal, and English. The instruction should be in the vernacular (except, of course, in English itself), though technical terms should be given in their English form. The English taught should be of that variety which is used in the ordinary affairs of life, and no attempt should be made to give the pupils an appreciation of English literary style.

In the third year of the Junior Technical School course, pupils should begin to specialise towards general engineering practice, electric fitting, textiles, light engineering or other industries of local importance. (Sections 86, 87, 88, 89, 90, 91.)

38. The Senior Technical School, with its two year course, should teach mathematics, physics, chemistry, mechanics, machine drawing and workshop practice, all of which are of value to a youth who is to enter one of the non-manipulative industries with the aim of occupying a position of responsibility. (Section 95.)

39. The principal of the Junior Technical School should be an engineer who has had both a university training and actual experience of industry;



the principal of the Senior Technical School should also have received a university training in science, though not necessarily in engineering ; the qualifications of the assistant staff will be determined by the subjects they teach.

In both types of school, it is of great importance that the principals should keep themselves in touch both with the schools from which they draw their pupils and with industry and commerce. They can do much to place their pupils in suitable posts on leaving, if they have established the right kind of relationships with prospective employers. (Sections 93, 94.)

### *Chapter VII.*

40. The best education for the business man with great responsibilities over a wide field is not necessarily in " commercial subjects ", since what he needs is certain valuable personal qualities which can be developed by the study, under suitable conditions, of other branches of knowledge in which he is interested. For young men who have to make their own way in life, the course followed in the commercial departments of universities is, however, more suitable, since they have, from the very beginning of their commercial life, to shew that they possess exact knowledge which will make them immediately useful.

The Senior Vocational School would provide a useful preparation for students unable to undertake university studies (Sections 98, 99, 100.)

41. If it were not for the fact that many clerical workers need a knowledge of English, the Junior Commercial School would form a suitable school for training clerical workers. As it is, the conditions demand the setting up of Senior Commercial schools, which would teach English, arithmetic, the elements of accounts, geography, shorthand and typewriting. In addition, they should give their pupils a knowledge of the general structure and methods of commerce by including " the elements of commerce " in their curriculum. (Sections 101, 102, 103, 104.)

42. The normal length of the course of the Senior Commercial School should be two years, following Class XI of the Higher Secondary School.

The principal should have good academic qualifications and, if possible, should have had experience of business, though this may have been gained in industry rather than in commerce. He should cultivate the same kind of external relationships for his school as are suggested above for the corresponding technical schools. (Sections 105, 106, 107, 108.)

### *Chapter VIII.*

43. The existing Industrial and Technical Schools of the Punjab have undergone various changes since their development was encouraged by the Industrial Commission. At the present time, they are training pupils both for handicrafts and for work in organised industry.

The schools belonging to this group in the United Provinces are more numerous. They range from weaving schools containing a proportion of illiterate pupils, to really advanced institutions such as the Harcourt Butler Technological Institute at Cawnpore, which gives post-graduate training to young men aiming at occupying high positions in industry.

The schools in the United Provinces can be conveniently classified into the following groups :—

- (a) Trade Schools, where boys are trained for employment as handi-craftsmen.
- (b) Industrial Schools, which prepare youths for working on their own account in small-scale industries.
- (c) Technical Schools, in which the students, after a sound education in the principles underlying industrial practice, or equipped for responsible industrial posts. (Sections 109—118.)

44. The annual expenditure on the Industrial and Technical Schools in both Provinces is high. It varies in the Punjab from Rs. 169 to Rs. 625, and in the United Provinces from Rs. 155 to Rs. 869. In the case of the larger institutions and those doing very advanced work, a high expenditure is probably justifiable ; but in the case of some of the smaller schools, doing elementary work, it is probably too high. The annual cost per pupil may be compared with that in an English Junior Technical School, where an investigation of the average expenditure on each of the 5,600 pupils in 42 schools shewed that it amounted to £23-2-0 (Rs. 308).

It is desirable that the Departments of Industries concerned with these schools should carefully review the expenditure. In particular, they should consider (a) the policy of concentrating the instruction into a smaller number of institutions : and (b) the policy of raising the standard of entrance to some of the schools, and thus diminishing the time spent in them by each student. (Sections 120, 121, 122.)

45. Many of the schools are “ monotronics ”, teaching a limited range of subjects, or, in some instances, only one subject. This type of organisation tends to duplication of certain services—supervision, clerical assistance, motive power and cleaning : moreover, it is impossible to group together for instruction in subjects of common interest students taking different courses.

The “ monotronic ” does not strike the imagination of the public in the same way as does a larger institution accommodating classes in a wide range of subjects. It is recommended that in each important centre of population the Government concerned should take a long view and endeavour to concentrate the classes, now scattered, into larger institutions. (Sections 123, 124, 125.)

46. Even where there is an entrance standard laid down for the admission of students, exceptions are made, in some instances, too freely. It is important, if there is to be proper economy, that there should be strict adherence to the conditions of admission. Further, when Junior Technical Schools have been established, it will be possible to cut down by one, or even two years, the course of instruction in the Industrial Schools which prepare their pupils for work in the manipulative group of industries. (Section 126.)

47. It is not possible at the present time to prescribe that pupils admitted to Trade Schools shall have passed successfully through Class VIII, though this is the ideal arrangement. It ought, however, to be possible to limit admission to pupils who have passed through Class VI. In no instance should a Trade

School be set up for training boys in a craft which is likely to be displaced by some mechanical operation. One variety of skill which is likely to be of permanent value is that used in the production of goods of artistic merit : and accordingly regard should be paid to the needs of those crafts whose success depends on beauty of design and skill in workmanship. (Sections 128, 129, 130, 131, 132.)

48. In the present position of organised industry in India, it is essential that workshop practice shall occupy a prominent place in the curriculum of the full-time technical or industrial school. In Great Britain, where the standard of workmanship is often very high, it is possible to share the burden of training recruits to industry between the industry itself, which gives workshop experience, and the school, which teaches the scientific principles underlying workshop practice. But this plan is not suited to Indian conditions. (Section 135.)

49. The Industrial Schools, training persons likely to be working on their own account, should teach such subjects as drawing, book keeping and the elements of commerce, for everyone engaged in business for himself should be able to calculate the cost of his materials and his work, to buy and sell skillfully and to keep records of income, expenditure and profits. (Section 136.)

50. It is recommended that, for the present, the control of Trade, Industrial and Technical Schools shall remain with the Departments of Industries, although it is contemplated that, with the development of vocational education in India, the conditions will change and the control of these Schools may have to be transferred to the Departments of Public Instruction. (Section 140.)

51. Although the recommendation of the Indian Industrial Commission that there should be an Imperial Inspecting Service for Industrial Schools has certain attractions, its adoption is not recommended. (Sections 142, 143, 144.)

52. There are certain industries in India for which the present provision appears to be inadequate. These include—the building crafts (and especially plumbing) and printing. (Sections 145—148.)

### *Chapter IX.*

53. The schools in India devote insufficient attention to the teaching of art and there is a serious risk of the artistic traditions of India being weakened. The spheres of influence of the existing schools of arts and crafts should be enlarged considerably ; and other schools of arts and crafts working in close association with them should be set up as opportunity serves. Far greater use should be made of the museums in the two Provinces by the gradual building up at each of them of a " Loan Collection " from which good examples and photographs of these could be lent to the Industrial and Technical Schools. (Sections 161, 162, 163.)

### *Chapter X.*

54. The Technical Schools should organise part-time day classes for young men already in employment. (Section 164 *et seq.*)

55. Since the pupils in attendance at part-time classes are gaining practical experience during their daily work, they should concentrate their attention

when at school on mathematics and those branches of science which have a close relation with workshop practice. (Section 170.)

56. The staff of teachers in part-time classes can often with advantage be supplemented by specialists from outside, who make up for any deficiency in teaching skill by the realistic atmosphere they bring into the schools. (Section 173.)

### Chapter XI.

57. In spite of the absence of industrial surveys in the Provinces, it was found possible to gain information relating to the methods of recruitment for (a) the railway service, (b) the Public Works Department and (c) the printing industry in Allahabad.

It is recommended that the conditions for admitting trade apprentices and others to the railway service and to the P. W. D. should be modified so as to give opportunities for employment to boys from Junior Technical Schools, as it is believed that this would result in the recruitment to these services of better trained boys. It would have the additional advantage of leading to the establishment in the industrial centres of Junior Technical Schools attended, in the first instance, by boys aiming at entering the railway and P. W. D. service and subsequently attended, as the value of the schools became known, by boys desiring to follow careers in other industries. (Sections 174 *et seq.*)

58. It is recommended that a printing school should be set up in Allahabad, since this is an important centre of this industry. It would be preferable to accommodate it in the same premises as other branches of vocational study. (Sections 185 *et seq.*)

### Chapter XII.

59. It is recommended that the Government of India shall take steps to re-organise the whole of the educational system of the Province of Delhi ; and, at the same time, to seek the collaboration of the Governments of the Punjab and the United Provinces in a scheme for the training of vocational teachers for all three provinces, at least.

On the vocational side of the re-organisation, it would be necessary to establish on the same site and under the same principal—

- (a) a Vocational Training College, working in close association with an ordinary Training College for teachers in each of the other two provinces,
- (b) a Junior Technical School, providing, during the first two years of its course, instruction in mathematics, science, technical drawing, wood and metal work, and English ; and, during its third year, instruction specialised in accordance with the needs of general engineering, electric wiring and textiles,
- (c) a Technical School attended by part-time as well as full-time industrial and commercial students,
- (d) a School of Arts and Crafts,

Teachers in training at the Vocational Training College would use the technical and art schools as practising schools. The premises of the existing Government High School in Delhi appear to be suitable, with the necessary extensions, for all these purposes. (Sections 192 *et seq.*)

### *Chapter XIII.*

60. In view of the importance of the vocational guidance of boys when they are on the point of deciding upon their future occupations, it is desirable that the problem of devising suitable methods for this should be attacked in India, as it has been in so many other countries. But the problem is so complex that it would probably be necessary for a number of the Provinces to co-operate with one another in the task of finding a solution. (Sections 212 *et seq.*)

61. The adoption of the recommendation of the Unemployment Committee of the United Provinces that the Government should publish a series of pamphlets describing careers for boys and the preliminary education needed for each career would without doubt serve a useful purpose. (Section 217.)

A. ABBOTT.

*May, 1937.*



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## **APPENDICES.**

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## APPENDIX I.

*The Curriculum, Accommodation and Equipment of a Junior Technical School.*

Although each Junior Technical School draws up its own curriculum and syllabuses, the following, which are in use in a very successful English school of this grade, is typical of all of them.

## CURRICULUM.

*Summary of Time Table.*

Subject.			1st Year.		2nd Year.		3rd Year.	
			45 min. periods.	Hrs. & Mins.	45 min. periods.	Hrs. & Mins.	45 min. periods.	Hrs. & Mins.
English ..	{ Lit. and Essay ..	5 }	6—	{ 2 }	5·15	{ 2 }	{ 3 }	5·15
	{ History ..	2 }						
	{ Geography ..	1 }						
Mathematics .. ..		8	6—	7	5·15	6		4·30
Drawing ..	{ Geometrical ..	4 }	6—	{ 3 }	5·15	{ 2 }	{ 2 }	4·30
	{ Machine ..	2 }						
	{ Structural ..	.. }						
	{ Art ..	2 }						
Science ..	{ Appd. Mechs. ..	.. }	3·45	{ 2 }	6—	{ 3 }	{ 3 }	6·45
	{ Physics ..	5 }						
	{ Chemistry ..	.. }						
Workshop	{ Metal ..	2 }	4·30	{ 2 }	4·30	{ 6 }	{ 1 }	5·15
	{ Wood ..	4 }						
	{ Materials and Processes. ..	.. }						
Physical Exercises.	{ Gymnasium ..	2 }	3·45	{ 3 }	3·45	{ 2 }	{ 3 }	3·45
	{ Games Field ..	3 }						
Assembly and Prayers ..		..	50	..	50	..		50
Recreation .. ..		..	50	..	50	..		50
Totals ..			..	31·40	..	31·40	..	31·40

## NOTES :

1. One half of one of the third year classes specialises in Toolmaking, and does an extra three periods in the workshop, losing thereby three periods of chemistry.

2. One third year class spends two periods in the Electrical Installation department, and loses thereby two periods of Metalwork.

## SYLLABUSES.

*English.*

The aim of the instruction in this subject is to develop clear, concise expression in speech and in writing.

The syllabus is not given, since it is not suitable for use in Indian schools.

## MATHEMATICS.

*1st Year Syllabus.**Arithmetic—*

Multiplication and division of decimals. Factorisation ; L. C. M.; vulgar fractions (not too complicated).

Averages ; ratio, proportion ; conversions (*e.g.*, miles per hour to feet per sec.; lbs. per square inch to grams per sq. cm.); percentages, particularly percentage alterations such as in gain or loss, stretching of a wire, change of resistance of a conductor when heated.

Square root and theorem of Pythagoras.

Logarithms of numbers greater than 1, and use of these for products, quotients and square roots.

*Mensuration—*

Rectangle, parallelograms, rhombus, triangle (area by  $\frac{1}{2}bh$  or by "s" rule) trapezoid, circle. Surface area and volume of cube, prism, cylinder, cone and sphere.

*Algebra—*

Meaning and use of symbols ; coefficient, index, term, factor. Rules of signs Addition, subtraction, multiplication, division. Simple fractions : simple equations and transpositions ; simultaneous equations (two unknowns) Factorisation. Solution of Quadratics by factorisation and by completing the square.

*Graphs—*

Simple plotting (careful attention to style, choice of scales, etc.). Plotting of straight lines from their equations.

*Trigonometry—*

Meaning of sine, cosine and tangent ; reading from the tables, solution of right-angled triangles.

*Experimental Mechanics—*

Plotting of position diagrams.

*2nd Year Syllabus.**Algebra—*

Revision of 1st year work, made more complete by practice in problems on that work. Harder fractions ; literal equations ; solution of quadratics by use of the formula ; variation ; arithmetical and geometrical progression ; indices ; general use of logarithms.

*Trigonometry—*

Revision and extension of work on solution of right-angled triangles ; ratios of angles from  $0^\circ$  to  $180^\circ$ ; the co-ordinates of  $^h x$  as  $h \cos a$  and  $h \sin a$  ; radians and length of arc.

*Mensuration—*

Revision of 1st year work, with technical bias to exercises. Length of chord of a circle ; frustum of pyramid and cone ; similarity. Easy problems on calculations of weights.

*Geometry—*

Line and angle properties of the circle.

*Graphs—*

Plotting of  $y = ax^2 + bx + c$ ,  $y = ax + bx + cx + d$ ,  $xy = c$ . Equation to a straight line  
Areas by mid-ordinate rule.

*Experimental Mechanics—*

Displacement and velocity diagrams ; change of velocity ; motion of a falling body ; trolley experiment ; motion of a projectile ; motion of a pendulum ; vector balance experiments ; momentum ; force as the rate of change of momentum ; Newton's Laws.

*Slide Rule—*

Use for multiplication and division.

*3rd Year Syllabus.**Algebra—*

Revision, indices and theory of logarithms, use of logs for negative powers ; simultaneous equations (three unknowns) ; simultaneous quadratics.

*Trigonometry—*

Ratio of angles of any magnitude ; solution of triangles by "sine" and "cosine" rules. Easy equations.

*Graphs—*

Sine, cosine and tangent curves ; slope curves ; graphic solution of equations ; circle ; ellipse ; hyperbola, determination of laws of types  $f(y) = af(x) + b$ ,  $y = ax^n$  ; areas by Simpson's rule.

*Calculus—*

Meaning of  $\frac{dy}{dx}$  and  $\frac{dy}{dx}$ .

Differentiation of  $ax^n$ ,  $\sin nx$ ,  $\cos nx$ , product and function of a function. Integration. An area as a definite integral.

*Experimental Mechanics—*

Angular Velocity ; uniform motion in a circle ; measurement of a blow ; change of angular momentum ; moment of inertia of bar and of cylinder.

*Slide Rule—*

General use with special attention to particular settings, e.g., volume of a cylinder, solution of triangles by sine rule, etc.

*Applied Mechanics.*

NOTE.—The study of this subject is not begun until the second year of the course.

*2nd Year.**Force—*

Definition and representation, summation of forces in straight line. Parallelograms, triangle and polygon of forces. Resultant, equilibrant and component forces. Velocity and acceleration.

*Principle of Moments.*—The lever ; beam reactions.

*Unit of Force.*—Time. Work and Power. Gravity.

*Variable forces.*—Time and space averages.

*Representation of work by area.*

*Horse power and Efficiency.*—

*Friction.*—Co-efficient of friction ; work done against friction ; movement of bodies on inclined planes.

***Machines—***

Definition and types; velocity ratio; mechanical advantage; efficiency. Experiments with machines; calculations upon, and plotting of curves shewing characteristics of machines. Finding the law of a machine; using pulley on axle with thick and thin cords; wheel and axle; pulley blocks; Chinese windlass, screw-jack and Weston's blocks.

*Strength and Characteristics of Materials.*—Elementary notions.

*Hydraulics.*—Elementary notions.

*3rd Year.****Materials—***

The elastic law. Limit of proportionality. Stress, strain and modulus of elasticity. Compression and shear. Elementary ideas of ductility, brittleness and hardness. Resilience. Principal properties of common engineering materials.

Revision of reactions at supports of beams. Bending moment and shearing force diagrams for concentrated loads on cantilevers and simply supported beams. Stresses in the flanges of I—girders and rectangular beams due to bending moment.

***Motion—***

Revision of ideas of displacement, velocity, acceleration and vector representation. The fundamental relations between force, mass and acceleration (engineer's units). Momentum. Centrifugal force.

***Energy—***

Forms of energy. Conservation of energy. Flywheel and pendulum problems on work. Tractive effort, and work done on inclines.

***Machines—***

Revision of velocity ratio and mechanical advantage. Energy methods. Efficiency and consideration of shape of curves of performance.

***Laboratory Work—***

Boys work in groups of two. As far as possible, experimental confirmation follows the enunciation of principles in the class-room, but this is not always possible, and sometimes a simple experiment precedes class treatment. The method of demonstration by teacher and selected boys is used when preferred.

*Chemistry.*

**NOTE.**—The study of this subject is not begun until the 2nd Year of the Course.

*2nd Year.*

Solution, evaporation, sublimation, distillation.

Crystallization, water of crystallization.

States and properties of matter.

Action of air on metals and of metals on air.

Rusting and combustion of metals and non-metals, leading to study of oxides, oxidation and reduction.

Chemical combination, atomic theory, elements, compounds, mixtures.

Laws of conservation of mass and of constant proportion.

Symbols, formulae, equations.

Water as an oxide.

Electrolysis of water, leading to a study of hydrogen.

Electrolysis of hydrogenchloride, evolution of hydrogen from hydrochloric acid by electrolysis and by replacement by metals.

Action of metals on common acids, formation of salts by displacement of hydrogen.  
Classes of oxides, acidic and basic oxides.

### *3rd Year.*

Formation of salts by neutralisation, quantitative considerations.

Equivalent weights, atomic weights, valency.

Carbon dioxide, carbonates and bicarbonates as salts.

Chalk and lime; hardness of water.

Industrial applications of carbon dioxide—the ammonia-soda process.

Sulphur, its oxides and oxy-acids.

Nitrogen, ammonia, nitrates and nitric acid.

Law of Multiple Proportions.

Fuller study of hydrochloric acid and chlorine.

Avogadro's Hypothesis and Law of Gaseous Volumes

Common metals—iron, zinc, copper, lead, aluminium, chromium, etc.

### *Physics and Electrical Engineering.*

NOTE.—The introduction to Electrical Engineering is postponed to the 3rd year.

### *1st Year.*

The use of metre rules, calipers, vernier calipers, screw gauges, etc., for the measurement of length and volume.

#### *General Physics—*

Units of length, mass and time. Measurement of length; parallax. Micrometer Vernier. Measurement of areas (counting squares). Measurement of volume (graduated cylinder). The balance. Density of solids (measuring volume by graduated cylinder). Density of water. Density of liquids by specific gravity bottle. Principle of Archimedes. Specific gravity of solids heavier than water. Hydrometers. Pressure. Barometer. Hare's apparatus. Notes on capillarity.

#### *Heat—*

Production of heat and its effects. Heating and cooling curve of water. Flow of heat. Thermometers; fixed points of a thermometer; calibration; conversion of scales, Effect of mixing equal quantities of water at different temperatures. Effect of mixing unequal quantities of water at different temperatures. Water equivalent of Calorimeter. Specific heat of solids and liquids. Change of state. Latent heat of steam. Cooling curve of paraffin wax. Expansion of metals. Coefficient of linear expansion. Conduction. Effect of lagging a calorimeter. Convection and applications. Thermos flask.

#### *Light—*

Demonstration that light travels in straight lines. Laws of reflection. Position of image—plane mirror. Tracing the path of a ray of light through a block of glass.

### *2nd Year.*

#### *Heat—*

Revision. Expansion of solids, liquids and gasses. Boyle's Law. Charles' Law.

#### *Light—*

Revision of Laws of reflection. Path of a ray through glass. Refractive index. Ratio of real and apparent depths. Reflection from spherical mirrors. Prisms. Spectrum. Lenses. Graphical construction for image. Bunsen photometer. Comparison of candle power of lamps.

*Magnetism—*

Properties of magnets. Comparison of magnet and magnetic substances. Molecular theory. Plotting magnetic fields by compass and by iron filings. Earth's magnetic field. Magnetic field due to current in a straight conductor and in solenoid. Magnetometer.

*Electricity—*

Preparation of Wires. Circuits and circuit diagrams. Electrolysis. Primary cells.

*3rd Year.**Electrical Engineering—*

The C. G. S. Units. Definition of the dyne and the erg. Revision of magnetism. Magnetic fields. Lines of magnetic force, their distribution and behaviour. Definition of field strength. Magnetic induction. Permeability. Resonance. Magnetic properties of iron and steel. Revision of electrolysis. Faraday's Laws of Electrolysis; applications. Revision of magnetic effects of current. Maxwell's Cork screw Rule applied to straight conductor, coil and solenoid. Electromagnets; their winding and use as compared with permanent magnets. Ohm's Law; difference between E. M. F. and P. D. of a Generator. Definition of the Ampere, Volt and Ohm, and their relation to the Electro-magnetic Units. Calculations on Ohm's Law and measurement of the internal resistance of cells. Resistances in series and in parallel. Specific resistance. The simple Potentiometer. The Wheatstone Bridge. Metre Bridge. The Post Office Box.

Revision of Heat and its measurement. Specific Heat. Heating effect of a current. Relation between electrical energy and heat. Electric radiators, etc. Costs of running electrical apparatus. The Joule, the Watt, and the B. O. T. Unit. Measurement of electrical power. Instruments: Galvanometers, Ammeters, Voltmeters and the variation of their range with the aid of Shunts and Series Resistances. The construction, action, use and care of primary and secondary batteries. Electromagnetic induction. Faraday's and Lenz' Laws. Principle of the Electric Generator. Ring Armature; Commutator. Difference between A. C. and D. C. Principle of the Electric Motor; Fleming's Rules for Motor and Dynamo. Principle of the starter for a Motor. Elementary Principle of the Transformer and Induction Coil.

## TECHNICAL DRAWING.

## I

*Practical Geometry.*

NOTE.—This subject should be taught so as to assist the Machine Drawing, *i.e.*, rather as a means than as an end in itself.

*1st Year.**Plane—*

Use of instruments and appliances. Points, straight lines, perpendiculars, angles. Properties of triangles, proportionals, scales, regular and irregular polygons, areas, circles, and tangents to circles. Construction of the ellipse by several methods.

*Solid—*

Plain, elevation and ground line. Simple solids, cubes, prisms and pyramids (tri., sq., hex., oct.) cone. Use of end views. Simple sections of these solids. Isometric projection.

*2nd Year.**Plane—*

The ray method, involving points, lines and angles, curved and rectilinear figures, reduction to figures of equal area; construction of figures from given data; problems relating to circles and straight lines; simple problems on cams, loci and mechanism.

*Solid—*

Problems on points and lines introducing co-ordinate planes with end view. Indices, treated very simply. Points, lines, true lengths, inclinations and traces of lines mainly from given plan and elevation. Projection and auxiliary projection of simple and special solids. Perpendicular plane; sections cut by it; projection of rectilinear figures in inclined positions, and of solids involving the above from given data.

*3rd Year.**Plane—*

The conic sections treated very simply. Construction and properties of the ellipse; circles and tangents; problems involving ray method for reduction and enlargement of figures to equal areas. Problems on polygons, loci, cams mechanism and the helix.

*Solid—*

Revise work of previous years. Projection of solids from written data only. Sections and true forms of same; new views of solids to conditions of line, of face or axis in certain positions. Perpendicular and inclined planes and sections cut by them, also rebatments of figures on them. The oblique plane, traces, inter-sections; angles of inclination. Use of auxiliary ground line. Three points in plane. True angles between traces; dihedral angles of faces of pyramid. Use of indices and contours. Interpenetration of solids; two cylinders; and cylinder and cone; prism and pyramid and sphere and prism. Application to engineering problems—boiler shells, domes, connecting rods, etc. Isometric projection with curves. Development of surfaces.

## II

## MACHINE DRAWINGS.

*1st Year.*

Notes on pencils, paper and instruments. Fixing, heading and arrangement of work on paper. Use of squares. Lettering, figuring and dimensions.

Working drawings of the models to be made by the boys in the workshop are first produced. Other simple models are then sketched and drawn, attention being given to descriptive names and to the purposes the parts serve.

Importance is attached to neat and clear drawings and to the production of good lines, lettering and dimensioning.

*2nd Year.*

Talks are given on machine details, the functions of parts being explained; the materials used and the reasons for their choice will be given. Notes are given in screw threads—accurate shapes and conventional representation; standard proportions of bolts and nuts; types of bolt heads; bolt and nut, castle nut, etc.

Details such as riveted joints, spanners (with general idea of proportions), gland and stuffing box, simple valves, etc., are sketched, freehand and in pencil, from the actual articles and the sketches dimensioned after the articles are measured up. A schedule of parts is included where necessary; each view is named and each section plane indicated. Assembly and detail drawings with sections are prepared from the freehand sketches.

*3rd Year.*

The work progresses on lines laid down in the previous years. Special attention is given to correct dimensioning, good proportions and quality of lines.

The drawings to be made are chosen from common engineering details, connecting rods, valves, etc. Working drawings of workshop models are also prepared. Tracings of some drawings are made and each boy is taught blue printing.

Further talks on engineering details are given and drawing office organisation is discussed.

## III

## STRUCTURAL DRAWING.

**NOTE.**—This subject is intended to treat the various problems of structural engineering, and all the allied types of engineering where structures occur, by graphical solutions as used in the drawing office. This should assist any calculated investigation, and where possible, the alternative solutions are mentioned.

*General—*

Composition and resultant of parallel forces; Bow's notation for describing forces; resultant of system of parallel forces; resultant of forces in any direction. General problems in frames using space diagrams, polar diagrams and the funicular polygon. Resolution and reactions with problems on beams and framed trusses.

*Framed Structures—*

Reactions for roof trusses and cantilever frames; stress diagrams with problems on the most common framed structures; effects of wind and oblique loads with examples showing how the stresses may be combined or treated separately; Warren girders, N girders, Pratt and Fink trusses with examples and problems on pent roofs.

*Beams—*

Graphical solutions for the reactions and the resultant load on a beam, with problems using concentrated and distributed loads or combinations of both. Shear and bending stresses in beams and how they are caused; problems on the graphical construction of the shearing force and bending moment diagrams of a beam for concentrated, distributed or any form of loading. Laws of strength of solid rectangular beams; neutral axis; resistance figures and the moment of resistance with simple problems on the construction of these figures. The modulus of a beam and its application to problems for comparing a beam's strength.

## WOODWORK.

*1st Year.*

The instruction will include the necessary drawing to scale. The work will be made from these drawings. Sketching from models will form an important part of the early training.

Construction and uses of the various tools and methods of manipulation.

Nature and properties of the various kinds of timber.

The following exercises and models will be worked upon. Each exercise is so arranged that a progressive tuition in the use of tools, and in the making of models and patterns is obtained.

Sawing and chiselling exercises.

Housing groove and torque joints.

Dovetail halving and bridge joints.

Inlay square on diagonal.

Pattern and core box for a bush.

Pattern for a fire bar.

*2nd Year.*

Models and joints of a more complex character, introducing new tools and methods of construction.

Elementary pattern making. Wood turning, use of various machines, such as band saw, circular saw, planer.



The use of patterns and draw will be demonstrated with moulding sand. The following models and patterns will be made :—

Mortise and tenon joints.

Pattern for :—

Base of surface gauge.

Surface plate.

Small hand wheel.

Plummer block, with cap.

Wall brackets.

Bottle jack.

Spur wheel.

Large hand wheel.

Pipe joint with core box.

## WORKSHOP MATERIALS AND PROCESSES.

### *3rd Year only.*

<i>Engineers' Tools</i>	..	..	Uses and descriptions.
<i>Smiths' Tools</i>	..	..	Uses and description. Welding. Hardening and tempering. Power hammers, etc.
<i>Machine Tools</i>	..	..	Diagrams shewing arrangements. Centre Lathe. Details, tools and tool slides; making, hardening and tempering tools for special purposes. Calculations on screw cutting, and trains of wheels. Calculations of speeds and feeds for work. Type and proportions of screw threads, and various methods of cutting threads.
<i>Files</i>	..	..	Manufacture and types.
<i>Emery Wheels</i>	..	..	Manufacture, types, calculation of speeds.
<i>Transmission of Power</i>	..	..	Various forms of mechanical power transmission. Belts, gears, ball bearings, clutches. Gear cutting, Chain drives. Calculation for gears. Notes on dividing head for gear cutting.
<i>Keys and Feather</i>	..	..	Types, uses, method of fitting, sliding fits, driving fits, etc.
<i>Workshop hints</i>	..	..	General talks.
<i>Materials</i>	..	..	Materials used in engineering work. Iron ores. Manufacture of pig iron, grey iron, mild steel, cast and alloy steels. Non-ferrous metals with proportions of constituents.

Methods of casting, forging, stamping, etc.

Sketches of furnaces, cupolas, etc.

## ENGINEERING WORKSHOP PRACTICE.

## THREE YEAR COURSE.

*1st Year* (one period of  $1\frac{1}{2}$  hours weekly).

Elementary operations and processes such as soldering, marking out (two dimensional only), filing and polishing, chiselling, drilling, metal bending, light riveting, etc., are covered by such models as the following :—

1. (a) Simple lap joint using tin plate.  
(b) Simple lap joint using any unprepared material—the joint to be tested on completion.
2. Riveted prism with cover plate joint.
3. Iron hinge.
4. Internal and external  $90^\circ$  angle gauge.
5. Ring spanner.
6. Hexagonal gauge.

*2nd Year* (two periods of  $1\frac{1}{2}$  hours weekly).

More advanced work including marking off (three dimensional), tapping and the use of stocks and dies, hardening and tempering, case hardening, the assembly of parts, etc. The use of the lathe—plain turning, centring in three and four jaw chucks, turning between centres. Knurling and turning to size for screwing, and more advanced drilling practice are dealt with in this year. The models made include 1" cube, centre punch, square carrier, calipers, tap wrench, depth gauge and square.

In the first and second years, talks upon the various processes involved in the work are given in the shop in conjunction with the practical work. The boys make their own notes and for homework record them in a special note book.

*3rd Year* ( $4\frac{1}{2}$  hours on one day a week).

The general third year course covers advanced bench work, fitting and assembly of parts and the use of such precision instruments as micrometer and vernier. The machines used are :—

*Lathes* of various types.

Work is of greater precision than in the second year and includes screw cutting.

*Milling machines* (both horizontal and vertical).

The use of the dividing head in milling is taught.

*Shaping machines.*

*Drilling machines.* Power saw, etc.

*Grinding machines.*

Besides using these machines, the boys are taught how to mark out and set up a job correctly.

The models made include toolmaker's clamps, toolmaker's vice, surface gauge, adjustable spanner, square and vee thread taps, reamers, vee blocks, stock and die, lifting jack, spiral fluted reamer, large clamps and small bench vice.

Demonstrations in oxy-acetylene and electric arc welding are given.

During this year a weekly lecture of 45 minutes duration is given on Materials and Processes (See separate syllabus).

A group of selected boys spend an extra half day per week in the machine shop when they receive some specialised instruction in tool-making. These boys make various small tools, gauges and simple press tools.

## ENGINEERING WORKSHOP PRACTICE.

## ALTERNATIVE SCHEME.

*Two Year Courses.*

The following scheme of instruction in engineering workshop practice is less ambitious than the one previously described.

It occupies two years only, and each boy is expected to spend from three to six hours a week in the metal workshop.

*Range of Materials* . . . . Wrought iron, mild steel, carbon tool steel, cast iron, cooper, aluminium, zinc, brass.

*Range of Processes* . . . . (a) *Hand Processes*—  
Cutting with snips, hacksaw and chisel.  
Chipping, filing, scraping and polishing.  
Screwing with taps and dies.  
Sheet—metal work—forming, beading, riveting.  
Forge work—drawing down, bending, upsetting.  
Hardening, tempering and annealing.  
Marking out.

(b) *Machine Processes*—  
Drilling with Brace, Sensitive and Pillar drills.  
Sliding, surfacing and taper turning in Centre.  
Lathe.  
Shaping.  
Simple tool grinding.  
Screw cutting.\*  
Milling.\*

*Range of Machine Tools* . . . Drills : Centre Lathes : Shapers : Tool Grinders : Power Hacksaw.

Miller.\*

\*NOTE— For those pupils who take a longer course than that covered in two years.

*Accommodation and Equipment of a Junior Technical School—*

The ordinary accommodation of a Junior Technical School should be like that of a Higher Secondary School. In addition, it needs a large science laboratory (about 1,000 square feet), a Woodwork room (at least 900 square feet) and an Engineering Workshop (at least 1,000 square feet).

The *Laboratory* should be equipped in the same way as a Physical laboratory usually is, but it should have one or more blank walls on which apparatus can be fixed. It is desirable that there should be one or more light girders fixed across it at a height of seven or eight feet, so that apparatus can, when necessary, be suspended from it.

It is an advantage to have a small chemical laboratory also, though this is not absolutely necessary, since the amount of chemistry included in the curriculum is small.

The *Woodwork room* should have properly fitted carpenter's benches for about 24 pupils. Space is needed for a lathe and a grindstone ; and there should be a store for timber and for the articles made by the pupils. A blackboard should be attached to one of the end walls.

The *Engineering Workshop* should have the following equipment, which is sufficient for classes of 20—25 pupils :—

- Benches with 24 vices.
- 2 Forces with anvils and tools.
- 1 Sensitive drill (pillar or bench type).
- 1 Pillar drill up to  $\frac{3}{4}$  inch.
- 5 Centre Lathes, mainly 6 inch.
- 1 Shaper, 10 or 12 inch.
- 1 Tool grinder.
- 1 Power hacksaw.
- 1 Miller.\*

This equipment, which is suitable for the "Alternative Scheme" described in this Appendix, would cost about £1,000. This estimate includes the provision of separate electric drives for the machine tools, and also of the miller and its accessories.

\* For the use of pupils taking a longer course.

## APPENDIX II.

## THE ELEMENTS OF COMMERCE.

The following syllabus is suggested for consideration by teachers of this subject.

*First Year.**Retail Trade—*

- (a) The organization and functions of a retail business.
- (b) The purchase of goods from wholesale dealer or the manufacturer. Price lists. Trade Discount. Invoices. Methods of payment :—cheques, money orders, postal orders. Profits :—gross profit, working expenses, net profit. Turn-over. The relation of net profits to turn-over. Net profit divided into (i) remuneration of management, (ii) interest on capital.
- (c) Simple explanation of the banking system. Current and deposit accounts. The Bankers' Clearing House.

*Wholesale Trade—*

- (a) The wholesale warehouse. Its organisation and functions. Purchase and sale of (i) manufactured goods ; (ii) raw materials and foodstuffs. Carriage of goods and its cost (using official tables). Terms of payment. Inland bills of exchange and promissory notes.

Throughout the instruction arithmetical exercises should be set wherever possible ; and examples of the documents used should be available as illustrations.

*Second Year.*

The work in this year will be mainly a repetition of that done in the first year, but it will deal in greater detail with the various topics.

*(a) The constitution of the firm.—*

- (i) The sole trader.
- (ii) Partnership ; its legal and economic aspects. The various modes of remuneration of partners.
- (iii) The Company with liability limited by shares—the Memorandum and Articles of Association ; the nominal or authorised capital ; the subscribed capital ; the called-up capital and the paid-up capital. The division of capital into various classes of shares. The borrowing of capital by means of Debentures. The transfer of shares (or stock) and Debentures (or Debenture stock). The Private Company. Co-operative societies.

*(b) Co-operation amongst business units.*

- (i) Conformity with the conditions of purchase and sale laid down by an association of traders.
- (ii) The association of business units into Kartels formed with the object of limiting or excluding competition within a defined market by either—the allocation to each business of a specified area of the market ; the fixing of minimum selling prices within the market ; or the establishment of a separate selling organisation for the market.
- (iii) Combines or Trusts. The combination of individual business units into larger units.

*(c) Money and Exchange.*

Money as a medium of exchange : effects of variations in its purchasing power.  
The Indian monetary system.

**Joint-stock banks: bank notes and deposits as substitutes for metallic currency: the limitations on the issue of bank notes. Methods of opening and operating a banking account: classes of accounts.**

**(d) *Export Trade.*—**

**Means of procuring orders: quotations: indents: functions of merchants, shippers, packing and forwarding agents; documents relative to shipping and insurance.**

**(e) *Import Trade.*—**

**Functions of import merchants and brokers; procedure in obtaining delivery of dutiable and non-dutiable goods; bonded warehouses. General knowledge of the methods of payment relating to exports and imports.**

## APPENDIX III.

*Occupations taught in the Trade Schools of the Paris Chamber of Commerce.*

(NOTE :—Only the main groups are mentioned, although a number of them include several separate trades.)

*For Boys.**For Girls.*

Blacksmith's work.  
 Engineer's fitting.  
 Tinsmith's work.  
 Metal plate work.  
 Engineer's Patternmaking.  
 Moulding.  
 Printing, including :  
     Typography,  
     Lithography,  
     Photogravure.  
 Bronze casting.  
 Art metal work (iron).  
 Stone carving.  
 Scientific instrument making.  
 Surgical instrument making.  
 Tailoring.  
 Carpentry and Joinery.  
 Plumbing.  
 Glazier's work.  
 Cabinet making.  
 Pottery.  
 Butcher's work.  
 Baking.  
 Cookery (chefs).  
 Grocery.  
 Confectionery.  
 Hotel work.  
 Retail selling, including  
     Ironmongery,  
     Haberdashery.

Flower making.  
 Embroidery.  
 Dressmaking.  
 Lingerie.  
 Millinery.  
 Lacemaking.  
 Corset making.  
 Furrier's work.  
 Dyeing.  
 Cleaning of textile goods.  
 Laundry.  
 Domestic crafts.  
 Retail selling.

*For Boys and Girls.*

Stationery manufacture.  
 Cardboard work.  
 Book-binding & gilding.  
 Leather work, including the manufacture of :  
     Purses,  
     Ladies' bags,  
     Suit cases.

## APPENDIX IV.

*Suggested Courses of Instruction for Part-time Students.*

It will be noted that the following courses of instruction, being intended for students who are already in employment, include no instruction in workshop practice. They are intended to be complementary to this, and invariably include mathematics, drawing and science, although the content of the syllabuses of instruction in these subjects differs in accordance with the nature of the industry in which the students are engaged.

The teaching of science, in particular, assumes new forms when workshops, originally intended for the purpose of producing goods, are employed as laboratories. The students should not be concerned as a rule with learning the ordinary methods of production, but with becoming familiar with the principles underlying production. For example, students of cotton spinning should not attempt to turn out great quantities of yarn, but should undertake the systematic investigation of the way in which the various functions of cleaning the raw material, attenuating, twisting it, etc., are performed by the different machines, and should concentrate on ascertaining the effect on the product of the variations which they make in the adjustment of the different elements constituting the complete machine. In this instance, science has become what is termed "technology". The method is scientific, but its form is different from what it usually is in the laboratory.

## MECHANICAL ENGINEERING COURSE.

*First Year.*

Mathematics.

Engineering Drawing.

Engineering Science.

*Second Year.*

Mathematics.

Engineering Drawing.

Engineering Science.

*Third Year.*

Mathematics.

Applied Mechanics.

One of the following :—

Heat Engines.

Engineering Drawing.

Electrical Engineering.

*Mathematics.*

In this subject, the general principles should first be taught; this should be followed by abundant practice in their application to such practical problems as come within the range of understanding of the students.

It is important that from the first the students should be trained in the use of graphs for both the representation of varying quantities and the solution of equations. In the second year, students should be introduced to the idea of differentiation, while in the third year they should acquire a fair knowledge of the elements of the calculus and should be taught to apply it to determining area, centre of area, Guldinus' Theorem, moments of inertia, etc.

*Engineering Drawing.—*

The main object of the instruction in this subject is to enable students to "read" an engineering drawing, that is, to visualise machine details from a drawing giving two or more views.



The most important part of the instruction is probably the making of dimensioned hand-sketches from actual machine details, of which there should be a plentiful supply available. From these sketches, plans and elevations should be made to scale, and these views should be combined to complete isometric drawings of the examples. The mere copying of drawings should be avoided.

### *Engineering Science.*

Since every mechanical engineer should have some knowledge of electro-technics, the elementary treatment of this subject is included in the course. Engineering science includes the study of force, work and friction, machines, electro-technics, energy and power.

In Electro-technics, students should gain an acquaintance with: magnetising force, magnetic field strength, electro-magnets, magnetic field of a simple machine, potential difference, electro-motive force, Conducting and insulating materials. Resistance of conductors; resistivity. Units—the ohm, ampere, coulomb, volt. Ohm's Law. Simple and divided circuits. Principles and use of galvanometers, ammeters and voltmeters.

## COTTON SPINNING COURSE.

### *First Year.*

Cotton Spinning.  
Textile Mathematics.  
Textile Drawing.

### *Second Year.*

Cotton Spinning.  
Textile Mathematics.  
Textile Science.

### *Third Year.*

Cotton Spinning.  
Textile Mathematics.  
Textile Science.

### *Cotton Spinning.*

The instruction in this subject should begin by giving the students in their first year a general view of the whole of the processes from the opening and cleaning of raw cotton to its spinning on ring frames and on mules. While the various mechanisms should not be discussed in great detail, students should have exact notions of the functions they perform in the long series of operations involved in the transformation of raw cotton into finished yarn.

In the Second and Third Years, the machines and the several functions which each of them is performing should be studied in detail.

### *Textile Mathematics.—*

Students of cotton spinning need not carry their knowledge to such an advanced stage as students of mechanical engineering, but, so far as it goes, their knowledge of mathematics should be thorough. They should be familiar with algebra, the use of logarithms, the elements of trigonometry and the use of graphs; and they should be accustomed to applying their skill to the calculations required in spinning.

### *Textile Drawing.—*

The instruction in this subject should enable students of cotton spinning to understand drawings of textile machinery, and to make suitable dimensioned sketches of simple parts of spinning machinery. Necessarily, the machine details used should be those found in a spinning mill.

*Textile Science.*—

The instruction in this subject should include the more elementary scientific principles needed in order to understand the materials and the operations of the spinning mill.

It should include a knowledge of—solids, liquids, gases; pressure and volume; Boyle's Law; the barometer; the principles of Archimedes; capillarity and surface tension.

Friction; co-efficient of friction; the advantages and disadvantages of friction; work done in overcoming friction; oils and lubrication; the use of ball and roller bearings.

Heat and temperature; expansion of solids, liquids and gases; the thermometer; Charles' Law; change of state; melting and boiling points; vapour pressure; humidity; wet and dry bulb thermometers; specific and latent heat; conduction, convection and radiation.

Work and energy; the principle of work; power; efficiency of the machine.

The principle of moments; weighing machines.

Stress and strain; Hooke's Law, fatigue of materials.

Dynamics; Newton's laws of motion; falling bodies; kinetic energy; momentum; centrifugal force.

Horse-power; work transmitted by the effective tension of a rope or belt.

Machines; mechanical advantage and efficiency.

Communication of motion; belt driving and velocity ratios of simple and compound straight drives; the convexity of pulley rims, the effect of slip on velocity ratios; tooth gearing; the velocity ratio of a simple and compound train of wheels; differential motions; chain drives, worm drives, and racks; calculations on the surface speeds of rollers and drafts between rollers; intermittent motion derived from ratchet wheels.

These two courses of instruction for part-time students have been described in some detail because they are constituted rather differently. The course in mechanical engineering cannot be regarded as possessing a central subject. It consists of three subjects—mathematics, drawing and science—which are cognate to each other. The course in cotton spinning differs from it in having a central subject—cotton spinning—with which are associated the ancillary subjects of mathematics, drawing and science.

It will be found that every grouped course of part-time instruction will have a general resemblance to either one or the other of these two main types.







Report of the Enquiry into the  
Indigenous Systems of Veterinary  
Medicine by A. Krishnaswamy

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IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH ADVISORY  
BOARD MEETING, JUNE, 1940.

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SUBJECT No. 66 (i).

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REPORT OF THE ENQUIRY INTO THE INDIGENOUS SYSTEMS OF  
VETERINARY MEDICINE BY A. KRISHNASWAMY.

IN pursuance of a decision of the Governing Body of the Imperial Council of Agricultural Research to undertake an enquiry into the efficacy or otherwise of the indigenous systems of treatment of cattle in India, Mr. A. Krishnaswamy, Special Officer, appointed temporarily for six months was entrusted with the work of :—

- (1) Collection and collation of all available useful information from manuscripts and other sources regarding indigenous systems of treatment in Orissa and Travancore and
- (2) the preparation of a report incorporating all the material resulting from this investigation.

Mr. Krishnaswamy has now submitted the attached report. It will, in the first instance, be considered by the *ad hoc* Animal Pests and Diseases Committee whose report will be submitted to the Advisory Board in due course for consideration.

S. BASU,  
*Secretary.*

NEW DELHI ;

*The 15th April 1940.*





*For the use of members only.*

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**REPORT OF THE ENQUIRY INTO THE INDIGENOUS  
SYSTEMS OF VETERINARY MEDICINE**

**BY**

**A. KRISHNASWAMY, G.M.V.C.**

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# REPORT OF THE ENQUIRY INTO THE INDIGENOUS SYSTEMS OF VETERINARY MEDICINE

BY

A. KRISHNASWAMY, G.M.V.C.

## INTRODUCTORY.

In pursuance of a decision of the Governing Body of the Imperial Council of Agricultural Research, to undertake an enquiry into the efficacy or otherwise of the indigenous systems of treatment of cattle in India, I was entrusted with the work of

- (1) Collection and collation of all available useful information from manuscripts and other sources regarding indigenous systems of treatment in Orissa and Travancore and
- (2) the preparation of a report incorporating all the material resulting from this investigation.

As time was the limiting factor, the following items of work, which were originally included in the terms of reference, had to be dropped :—

- (1) Preparation of a list of important vegetable and animal products used in the indigenous systems of treatment and wherever possible, a description of their actions and uses and enumeration of some useful prescriptions.
- (2) Arranging for trials in collaboration with the Imperial Veterinary Research Institute, of drugs alleged to be efficacious in the treatment of contagious or non-contagious diseases or other abnormal conditions.

It was also decided that, in view of the limited time allotted, no attempt should be made to assess the value of the indigenous drugs which should, if considered necessary, form the basis of a future comprehensive programme.

I took charge of the scheme on the 25th of May 1939 at Simla. In accordance with the approved tour programme, I left Simla on the 2nd June 1939 and started my investigation in Travancore and Cochin States where I spent about a month. I spent two months in the Madras Province, one month in the Orissa Province, two days in Calcutta and about twenty days in actual travel. The programmed visits to Lucknow and Benares had to be dropped, and the period allotted for the Calcutta visit had to be curtailed due to want of time, and I returned to Delhi on the 22nd of October 1939. The rest of the period and my deputation was devoted to the preparation of the report.

*Collection and collation of literature.*—In the case of human medicine, the investigation on indigenous drugs has been greatly facilitated by the existence of several standard original Ayurvedic works, which have all been published, and by the extensive spade work done by eminent research scholars like Wise, Ainsley, Roxburgh, Hooper, Dymock, Captain C. Johnston Saint and others, who got the original literature translated, and investigated their contents. In addition, their original contributions on Ayurvedic medicine

are also of considerable value. In the case of Veterinary medicine on the other hand, many of the most valuable original works appear to have been lost, probably due to want of proper care in their preservation. The few that have survived the ravages of time are lying neglected and unknown to the profession, evidently due to lack of a sufficient number of pioneer workers in the field, and the scant attention paid to them by the profession and the public at large. As far as the collection of material is concerned, I have divided it under two main heads :—

- (1) Collection of information from original and authenticated standard works.
- (2) Collection of information from the rural veterinary *Vaidyas* (doctors) who still practise empirical treatment in most of the villages in India.

Lack of printing or other copy-making facilities in the ancient days has been responsible for the loss of much valuable knowledge which according to the prevalent custom, was passed on from generation to generation, mainly through oral and practical training, in the families of hereditary physicians and surgeons. In this process the original science has undergone many changes, so much so, that the so-called empirical treatment of the village *Vaidyas* (doctors) of to-day, is nothing but a degenerate and totally altered form of the system advocated in the original literature. In some cases these changes have been responsible for bringing the original literature to disrepute.

As one who has been studying the science of indigenous veterinary medicine from ancient literature for the last 12 years, I know that manuscripts on Ancient Indian Veterinary Science exist in all the Provinces and States. It is also well-known that empirical treatment of the *Go-Vaidyas* (Cow-doctors) is still practised in every Province and State. It is not possible, however, to collect and compile complete information from every part of India, within six months allotted for the present investigation. Though the Travancore and Orissa had been fixed as the main venues of my investigation under the present scheme, some other places were also, visited—with the approval of the Council. Visits to these places have yielded fruitful results, as will be indicated hereafter.

#### ITINERARY.

*Travancore and Orissa.*—My tour in both the States was fairly exhaustive almost all the libraries where oriental manuscripts are preserved were visited and a number of rural veterinary practitioners were interviewed. In order to enable me to assess the merits of these practitioners and their treatment, a small questionnaire was prepared and circulated among them. A copy of the questionnaire is enclosed (Appendix 'F').

One noticeable feature in these States was the recognition given by the Governments to the indigenous veterinary practitioners, in the form of grants-in-aid. Six indigenous veterinary practitioners have been appointed in the Travancore State. In Cochin, the Government has appointed indigenous veterinary doctors for the treatment of elephants. Besides, there are indigenous veterinary practitioners in most of the villages, and some herbariums have also been maintained where most of the herbs and plants required for indigenous treatment are available for sale.

Some of these practitioners receiving grants-in-aid are making a fairly impressive show of their profession by establishing rural dispensaries, where animals are brought for consultation and treatment; while some other

who are illiterate, are taken from their homes for the purpose of consultation and treatment. Many of them have some old palm leaf manuscripts on indigenous veterinary science, and these were reported to be the only copies of some original indigenous treatises on horses and cattle. Most of these practitioners were unwilling to part with their manuscripts, while one or two were willing to give them for reference purposes only. A photo copy of a few pages from one such manuscript is reproduced here to illustrate how these ancient sciences have hitherto been preserved in this country. (Plates I and II).

Though State recognition has been given to indigenous veterinary treatment in Travancore and Cochin and the practitioners possess original palm leaf manuscripts containing such useful information to the veterinary profession, it is a matter of genuine regret that in actual practice the treatment is not carried out either on rational lines or in strict conformity with the instructions contained in the manuscripts.

*Madras Province.*—The Government of Madras have supplied to all the veterinary hospitals, copies of the manual called *Go-samrakshana Sastram* (a treatise on indigenous veterinary medicine) and the Officers-in-Charge have been allowed to use their discretion in prescribing bazaar drugs of known repute whenever and wherever possible.

In Madura District, at a place called Thevaram, an original palm leaf manuscript on the treatment of cattle, was available and the particulars therefrom were taken down.

The next important institution visited was the Saraswathi Mahal Library, Tanjore. This library contains a unique collection of manuscripts on veterinary science. On a careful scrutiny it was discovered that some of these manuscripts are the originals of the ancient treatises on veterinary medicines. It became evident during the course of my tour that similar manuscripts found elsewhere were merely copies of some of the original available in this library. During my stay, there, all the manuscripts on veterinary science were scrutinised, and a detailed list with their contents was prepared.

At Tiruvarur, a small town in the Tanjore District, the author of a Tamil manual on the treatment of cattle by means of indigenous bazaar drugs called *Go-samrakshana Sastram* was interviewed. At Chidambaram, I visited the Annamalai University Library and interviewed Mr. S. Kuppaswamy Sastri, M.A., I.E.S., Honorary Dean and Professor of Sanskrit of the Annamalai University who gave me some valuable information about the existence of literature on ancient veterinary science at Madras and at some other places in India.

In the city of Madras the Government Oriental Manuscript Library, the Madras University Library, the Connemara Library and the Adyar Library were visited and a comprehensive list of all the literature available there was prepared and several persons were interviewed. Information collected there, will be found in the statement appended to this report.

The Raja of Venkatagiri, a zamindar in the Madras Province, who owns a number of horses, patronises the indigenous system. The present employee of the Raja was interviewed and particulars of the treatment adopted by him were recorded. At this place two other practitioners were also interviewed and the particulars obtained from them are given in Appendix 'D'.

Report of the Enquiry into the Indigenous systems of Veterinary Medicine by  
A. Krishnaswamy

THE  
**Andhra Jatheeya Pasuvaidya Kalasala**



REGISTERED BY THE GOVERNMENT  
ANGALURU.

This is to certify that .....  
son of ..... resident of .....  
..... Village in the ..... District,  
having complied with the requirements in accordance with the regu-  
lations of the Andhra Jatheeya Pasuvaidya Kalasala, and  
having duly passed the *Theoretical Public Examination of*  
*Pasuvaidya Acharya* held in ..... 19 ....., and the  
*Practical Examination* held in ..... 19 ....., is in  
our opinion, considered to be properly qualified to practise *Ayur-*  
*vedic Veterinary Medicine* and is hereby granted this Diploma of  
*Licentiate of Ayurvedic Veterinary Medicine & Surgery*  
( A. V. L. M. & S. ) issued under the Seal of the Andhra Jatheeya  
Pasuvaidya Kalasala in the convocation meeting held on the  
..... day of ..... 19 .....

Principal

President of the  
Convocation

At Bezwada, a prominent town in the Krishna District (Madras Province) a place called Angaluru was visited where an indigenous veterinary institution called 'Andhra Jatheeya Pasu Vaidya Vidya Peetam' is being run. This is a private institution, where students receive training in the indigenous system of veterinary medicine and obtain a diploma after the completion of the prescribed course. A copy of the diploma granted by the Institute, is attached (Plate III). Mr. Y. Sree Ramalu Chowdhuri, the president of the institution, has published in Telugu a number of manuals on indigenous veterinary medicine. A list of these manuals is furnished in Appendix 'B'. I am not in a position to express any opinion about these manuals without a scrutiny thereof, nor is it in my province to comment on the usefulness of this indigenous veterinary institution.

*Orissa Province.*—It is a part of the normal routine of the officials of the Veterinary Department of this Province to collect information on indigenous veterinary drugs from rural veterinary practitioners. A compiled list of bazaar drugs of proved efficacy and cheapness has been supplied to the entire staff of the Veterinary Department, with instruction to include their requirements of these drugs in their annual indents. Sufficient quantities of indigenous drugs are stocked in all the hospitals and the veterinary staff has definite instructions to use only those drugs which are cheap as well as efficacious. The districts of Cuttack, Puri, Ganjam and Sambalpur were toured and 36 rural practitioners were interviewed. The Ravenshaw College Library, Cuttack and the Sanskrit College Library at Puri were visited next. Some valuable information, available in these places was recorded. In this Province as in Madras, Travancore and Cochin, there were a large number of rural veterinary practitioners. What struck me as specially remarkable was the ease with which indigenous herbs were available for use.

*Calcutta.*—On my way back from Cuttack to Delhi I halted at Calcutta for a couple of days with the object of securing the material available in the Royal Asiatic Society Library and the Imperial Library. In view of the Puja holidays, however, the usual facilities for examining the books were not available. There is, however, no doubt that next to the Saraswati Mahal Library, Tanjore, it is here that our search for ancient literature on authentic veterinary medicine should be made.

#### LITERATURE COLLECTED

(A) *Collection of information from the rural veterinary practitioners.*—A large mass of information, particulars of which will be found in Appendix 'E' is now available. This contains information, in different provincial vernaculars, in respect of a very large number of single herbs and compound preparations and now requires compilation in a proper form.

A scrutiny of these lists reveals some interesting features. It is claimed that the almost all diseases of cattle, *e.g.*, ailments such as bruises and wounds, or the most complicated cases, have been treated satisfactorily. In Travancore, cases of overgrown hoof as a result of bovine lymphangitis, cancer, chronic otorrhea, rheumatism etc., are claimed to have been treated successfully. The following medicines mentioned in these lists are worthy of note :—

(1) A herb known by the name of 'Brahma Rakshas' is reported to be a specific for cancer.

(2) An oil prepared from the juice of black *Dhatura* leaves, coconut oil and slaked lime is reported to be very effective in the early stage of cancer and in all indolent wounds and fistula.

(3) The juice of plant called '*Heliotropium indicum*' is said to be an infallible remedy in all cases of otorrhoea.

(4) In Orissa, a list of several diseases treated by the officers of the Civil Veterinary Department with indigenous drugs together with the results obtained, has been compiled.

(5) In this Province, special claim is made for the successful treatment of snake-bite, with herbs known locally as 'Ram Kedar', 'Krishna Kedar' and 'Sukra Kedar'. Samples of these herbs were shown and given to me.

(6) The paste of a plant, called 'Hada Bonka' in Oriya, prepared in cow's milk is reported to bring about a very rapid union of fractured bones.

(7) In the course of my halt at Venkatagiri an indigenous practitioner showed me a method whereby the ordinary crude ferri sulphas as obtained from the bazaar could be easily, and at very little cost, converted into a fine and easily assimilable form of reduced iron. It was stated that in this form the drug was effective in much smaller doses.

(8) Similarly, a process of reducing the toxicity of pure arsenic by calcination, whereby the drug can be administered in larger doses with quicker results and with no fear of its toxic effects, was also demonstrated and shown to me.

(9) There is a drug called 'Rasakarpur' (Mercury biborate) which if calcined, in accordance with a certain process is reported to be a specific for ascites and other dropsical conditions. The process of calcining was also demonstrated.

It is impossible in the short space of a report of this kind to do justice to the value of the material collected. For a proper appreciation, the material requires to be compiled systematically and the drugs tried on cases in a rational manner.

(B) *Collection of Information from Ancient Literature.*—The results of investigation under this head will be found in Appendix 'B'. Collections from the libraries of Travancore, Cochin, Tanjore, Madras and Cuttack have also been included. A scrutiny will show that the available information covers a wide range of indigenous drugs and their preparations, and the treatment of several and varied ailments (*vide* pages 8 to 16, 20 to 24 and 45 to 58 of Appendix 'B'). Of the several diseases treated the following deserve special mention :—

(1) *Tuberculosis.*—This is one of the diseases engaging wide attention to-day. A detailed description has been given in respect of this disease. It is classified into 7 different types. Clinical symptoms, differential diagnosis and treatment of each of them are dealt with in detail. Lack of space forbids me from recording here all the interesting information available in the literature under this head.

(2) *Sterility.*—This is another subject about which several remedial measures consisting of medicines for internal administration, vaginal and uterine pledgettes have been given.



(3) *Tetanus*.—This is another disease which has been dealt with in the ancient literature. Three different kinds of infections have been recognised, of which two have been declared as incurable and the third is reported to be curable with difficulty. Treatment thereof is described.

(4) *Lymphangites*.—Three kinds have been described with their respective treatment.

(5) *Protozoan diseases*.—In respect of the various Protozoan diseases, effective anti-tick and anti-fly remedies are at present seriously engaging the attention of the Veterinarians. In this connection, the following prescription mentioned in the indigenous veterinary literature is worthy of note :—

Fumigation of a compound powder (dried and powdered) of the seeds of *Semicarpus anacardium*, fruits of *Calatropis gigantea*, roots of *Cyperus rotundus*, fruits of *Dolichos carpopogon*, resinous exudation of *Shorea robusta* and white mustard in stables, cattlesheds and kennels, and applications of the above powder on the bodies of the infested animals. It is observed that very satisfactory results are obtained by the adoption of the above methods.

It is not possible to detail out all the diseases in this report. Among the other interesting subjects treated in these collections are the various kinds of fevers, digestive and urinary disorders, intestinal worms, pulmonary affections, the different types of inflammatory swellings and sprains, skin diseases, and diseases of the eye and ears, diseases of the scrotum, piles, rheumatism and various kinds of surgical cases like tumours, hydrocele, fractures, and treatment of sinuses, fistula, wounds, canker, etc.

The subject of 'Gynaecology' including the formation of the foetus, the parental elements (the maternal and paternal elements which form the foetus), the monthly development of the foetus and account of toxicology of drugs are also some of the noticeable features. General hygiene dealing with feeding, watering, nature quantity and quality of food, time of feeding etc., are also dealt with. Instructions on Anatomy and Physiology have also not been lost sight of. Among the several indigenous preparations are found many kinds of electuaries, powders, infusions, decoctions, medicated oil, ghee, wines, steam-inhalations, fumigations, vapour baths, snuffs, collyria, embrocations, liniments and plasters, etc.

Unless the information available under this head is properly compiled, translated and made available for trial on rational lines, it will not be safe to venture a final opinion on their efficacy.

*Recommendations*.—The brief enquiry that has been possible during the short period of this investigation can only be described as of a preliminary character. The field to be traversed is vast and the enquiry so far conducted, has only served to show that a great deal of further investigation on proper and well-organised lines is essential, if final conclusions are to be arrived at in regard to the efficacy or otherwise of the indigenous drugs, and their wider use by the veterinary profession. For this purpose it will be necessary to compile a list of all the drugs and preparations from the information collected from the rural practitioners (*vide* Appendix 'E') and from all the modern day manuals, a list of which, is furnished at the end of Appendix 'B'.

Arrangements have also to be made to obtain copies of the original literature mentioned in Appendix 'B', and also copies of the palm leaf manuscripts available with rural practitioners of Travancore. The collected material should then be translated and from it a list of all the drugs and their preparations with indications for their use etc. should be compiled.

In the course of such compilation, it may be desirable to visit other places mentioned in Appendix 'C' which have not been hitherto visited and where useful information is reported to exist.

There are already two other schemes under the Council which have a close bearing on the present enquiry—one of these relating to a comprehensive study of the indigenous drugs in general, including the treatment of cattle diseases is working under Lt.-Col. Chopra at the School of Tropical Medicine, Calcutta, and the other dealing with the investigation of indigenous drugs of known repute, with special reference to their toxicology, is being worked out under guidance of the Surgeon-General, Madras. In the absence of sufficient material on indigenous veterinary medicine, which can only be collected from authentic literature of which there is no dearth, any investigation on indigenous veterinary medicine must be deemed to be based only on human medicine. Sufficient stress cannot therefore, be laid on the fact, that such investigation based on the plentiful information now available with us, will alone yield better and more fruitful results. The information collected and compiled as a result of the present investigation may therefore be passed on, if approved, to the two officers in charge of the other schemes for necessary trial and investigation.

Finally it may be observed that in view of the difficulty of the present day allopathic treatment reaching the distant villages, and of the easy availability of the indigenous herbs and plants at low cost, a further investigation into the efficacy of the indigenous drugs for which some data, have now been accumulated, seems to be a matter for serious consideration. The need for assessing their value on a rational basis is self-evident.

*Conclusion.*—In conclusion I desire to record my gratitude to the Government of Madras, Orissa, Travancore and Cochin, for their co-operation in this enquiry. To the Animal Husbandry Commissioner with the Government of India and the office of the Imperial Council of Agricultural Research in particular, I am indebted for the various facilities secured for me during the tour. Lastly I also desired to acknowledge the help rendered by the gentlemen mentioned in Appendix 'D'.

The following Appendices are attached to this report :—

APPENDIX 'A'.—A list of all the original authors and their works on indigenous veterinary science.

APPENDIX 'B'.—A list of the verified references on indigenous veterinary medicine.

APPENDIX 'C'.—A list of the places and institutions where literature on indigenous veterinary science is reported to be available but which were not visited.

APPENDIX 'D'.—A list of the rural veterinary practitioners interviewed at the several places with particulars of information collected and the veterinary literature available with them.

APPENDIX 'E'.—Details of information on indigenous veterinary medicine collected from all the Provinces and States.

APPENDIX 'F'.—Copy of the Questionnaire circulated to several rural veterinary practitioners.

A. KRISHNASWAMY,

23-11-39.

## APPENDIX 'A'.

*A list of all the original authors on Indigenous Veterinary Science with details of their works so far known.*

Name of the author.	Particulars of their work.
1. Salihotra . . . .	The first and the most original author of a big treatise on veterinary science in Sanskrit. The full work is now not available. A portion is available at Tanjore and other portions are reported to be available at Lucknow, Kashmere, Calcutta, etc.
2. Palakapya . . . .	Author of a book called Hasthyayurveda—(Sanskrit). Available in print.
3. Rajaputra . . . .	Author of a treatise on veterinary science—(Sanskrit). The work is not available.
4. Vaisampayana . . . .	Author of a treatise on veterinary science—(Sanskrit). Available at Tanjore. Not printed.
5. Vyasa . . . .	Author of a treatise on veterinary science—(Sanskrit). Available at Tanjore. Not printed.
6. Narada . . . .	Author of a treatise on veterinary science—(Sanskrit). Not available.
7. Mrigacharma . . . .	Author of a treatise on veterinary science—(Sanskrit). Not available.
8. Dinapathy . . . .	Author of a treatise on veterinary science—(Sanskrit). Not available.
9. Brihaspathi . . . .	Book called Brihas pathimata—(Sanskrit). Available at Madras. Not printed.
10. Sukra . . . .	Book called Sukraniti. Available in print.
11. Veerasena . . . .	Book called Hasthy Vaidyaka—(Sanskrit). Not traceable.
12. Jayadatta Suri . . . .	Book called Asva Vaidyaka—(Sanskrit). Available in print.
13. Nakula . . . .	Book called Asva chikitsa—(Sanskrit). Available in print.
14. Gana . . . .	Book called Asvaayurveda Sarasindhu—(Sanskrit). Available at Tanjore. Not printed.
15. Malladeva Pandita . . . .	Book called Asvaayurveda Sarasindhu—(Sanskrit). Available at Tanjore. Not printed.
16. Simhadatta . . . .	Author of a treatise of veterinary science in Sanskrit. Not traceable.
17. Nala . . . .	Author of a treatise of veterinary science in Sanskrit. Not traceable.
18. Jayadeva . . . .	Author of a treatise of veterinary science in Sanskrit. Not traceable.
19. Garga . . . .	Book called Asvayurveda—(Sanskrit). Available at Ravenshaw College, Cuttack.

APPENDIX 'A'—*contd.*

Name of the author.	Particulars of their work.
20. Atreya . . . .	Book called Ushtrapathakalpa—(Sanskrit). Reported to be available at Kashmere.
21. Vatsya . . . .	Book called Vatsyayana Sutrās—(Sanskrit). Available in print.
22. King Indusena . . . .	Book called Sarasangraha—(Sanskrit). Not available.
23. King Voja . . . .	Book called Yukthikalpataru and another called Vajichikitsa. Former available in print—latter not available.
24. Sarangadhara . . . .	Book called Turanga pariksha in Sanskrit and another called Vajichikitsa in Sanskrit. Not available.
25. Someswara . . . .	Book called Abhilashitartha chintamani in Sanskrit. Available in print.
26. Vahada (son of Vikrama) . . . .	Book called Asvayurveda Sarasangraha in Sanskrit, reported to be available in Kashmere.
27. Baseva Mantri . . . .	Book called Sivatatva Ratnakara—(Sanskrit). Available in print.
28. Geervana Yuddha Vikrama . . . .	Book called Vaj Rahasya Sataka in Sanskrit, reported to be available in Kashmere.
29. Sivamara Bhupati . . . .	Book called Kalpana Ratna in Sanskrit. Available in Trivandrum.
30. Viswanath Vajpeyi . . . .	Book called Turaga Siddhi in Sanskrit, reported to be available in Kashmere.
31. Dipankara . . . .	Book called Asva Vaidyaka Sastra in Sanskrit. Not traceable.
32. Rudra Deva . . . .	Book called Syāenika sastra in Sanskrit. Available in print.
33. Author not known . . . .	Book called Hayaleelavati in Sanskrit. Not traceable. Quotations are found in Malinatha Suri's commentaries (Sanskrit).
34. Author not known . . . .	Book called Karikalpataru in Sanskrit. Available in Travancore.
35. Author not known . . . .	Book called Hayadipa in Sanskrit. Available in Travancore.
36. Author not known . . . .	Book called Gaja Pakshi Patala in Sanskrit is a portion of a bigger book called 'Vishnu Yamala'. Available in print.
37. Author not known . . . .	Book called Basantaraya in Sanskrit. Available in print.
38. Manu Samhita . . . .	In all these treatises useful information on indigenous veterinary medicine is available.
39. Brihat Samhita . . . .	
40. Prasara Samhita . . . .	
41. Kautilya's Arthashastra . . . .	
42. Matsya Purana . . . .	
43. Garuda Purana . . . .	
44. Agni Purana . . . .	
45. Brahmanda Purana . . . .	
46. Linga Purana . . . .	

## APPENDIX 'B'.

*A list of the verified references on Indigenous Veterinary Medicines.*

*Travancore.*

I. *Mss.*—No. 1032.—*Hasthyayurveda* or Elephantology—By Palakapya—4000 granthas—Script Malayalam—Language—Sanskrit—An elaborate treatise on the diseases and treatment of elephants.

II. *Kalpana Ratna*.—Author not known—Deals with the tusks of elephants and their periodical cutting, etc.

III. *Mathangaleela*.—By Nilakantha Sastry, Travancore State Government—Press publication—Deals with the capture and training of elephants and also some of their diseases and their treatment. This book has been translated into English by Edgerton, Professor of Sanskrit and Comparative Philology, Yale University, U. S. A. and is entitled 'Elephant Sports of the Hindus'. It deals mostly with the mode of capture and the careful training of elephants and contains very little information regarding the treatment of diseases of elephants.

IV. *Kalpana Ratna*.—Palm leaf—120 slokas—Author Sivamara Bhupathi—Language and script—Malayalam—A short treatise on elephants.

V. *Kalpana Ratna*.—Same as above with Malayalam commentary by Mahanaga.

*Cochin State.*

VI. *Asva Vaidyaka*.—Palm leaf—Language and script—Malayalam—This is a treatise on the diseases and the treatment of horses. Available in the Paliam Library, Sendamangalam, Cochin State—MSS. No. 881.

*Tiruppunithura Library.*

VII. *Asva Vaidyaka and Ushtra Vaidyaka*.—MSS. No. 1025—Treatment of horses and camels—Palm leaf—In a fairly good condition.

VIII. *Gaja chikitsa*.—MSS. No. 926—Language and script—Malayalam—Treatment of elephants.

IX. *Hasthyayurveda*.—Palakapya—MSS. Nos. 920 and 922—This is one of the original works on veterinary science. A very comprehensive work on the diseases of elephants and their treatment. Two copies are available—Script—Malayalam.

X. *Gaja chikitsa*.—MSS. No. 921—Language and script—Malayalam—Author not known.

*The Saraswathi Mahal Library, Tanjore.*

I. *Asva chikitsa*.—Catalogue No. 11243 (Burnell's 12309)—Paper—Language and script—Devanagari—Sheets 25—350 slokas—Author Nakula—Consists of the following chapters :—

- Chapter 1.—Pedigree, breed, etc.
- Chapter 2.—Colour.
- Chapter 3.—Marks, etc.
- Chapter 4.—Teething.
- Chapter 5.—Description of body, limbs, etc.
- Chapter 6.—Riding and training of animal.
- Chapter 7.—Examination of the pulse.
- Chapter 8.—Vinesection and bleeding.
- Chapter 9.—Care of animals during heat.
- Chapter 10.—Medicated snuff.
- Chapter 11.—Boluses and balls.
- Chapter 12.—Medicated ghee.
- Chapter 13.—Toxicology.
- Chapter 14.—Stable construction.

APPENDIX 'B'—*contd.*

Catalogue No. 11244 (Burnell 12304) is also a copy of the above.

II. *Asva sastram*.—MSS. No. 11245 (Burnell 12310)—11 sheets—Author Nakula—Language and script—Sanskrit—150 slokas—Incomplete. Begins with the colour of animals.

III. *Asva Tantram*.—MSS. No. 11246 (Burnell 12307)—19 sheets—Author not known—227 granthas—Language and script—Sanskrit—Incomplete.

IV. *Siddhayoga samgraha*.—Catalogue No. 11247 (Burnell 10747)—Palm leaf—Leaves 400—Language and script—Sanskrit—Author Gana, son of Durlabha—4,000 slokas—This is a rare work on veterinary science. The author professes that he wrote this after consulting older works of Salihotra, Dinapati and Garga. An exhaustive work on several diseases of animals and their treatment. Several medicinal preparations are mentioned herein. It consists of the following 6 parts :—

Part 1.—Description of country, pedigree, breeds, classification, colour, age, life period, good and bad marks, etc.

Part 2.—Anatomy—detailed description of the body, limbs, their proportion, constituent parts of the body, etc.

Part 3.—The different medicinal preparations, general hygiene, rules for feeding and watering, posology, etc.

Part 4.—Diagnosis of diseases—Description of the several diseases and their symptoms.

Part 5.—Treatment of diseases. This occupies the major portion of the work.

Part 6.—Miscellaneous topics.

This manuscript is by itself incomplete. Some other copies are, however, available and it should be possible to compile one complete book, with the help of, these copies.

V. *Asvayurveda Sarasindhu*.—Catalogue No. 11257 (Burnell 12312)—Paper—105 sheets—3,860 slokas—Language and script—Sanskrit—Author Vaisampayana—Complete—Like the previous one this is another big veterinary treatise and a rare work containing a comprehensive survey of all diseases and their treatment.

VI. *Asvayurveda Sarasindhu*.—Catalogue No. 11256 and 11258 (Burnell 12313 and 12370)—Paper—266 pages—Language and script—Sanskrit—About 8,000 slokas—Author reported to be Malladeva Pandita and Vaisampayana—Complete—Detailed contents are given below which will show that the work is a very rare and exhaustive one :—

1. Obeisance to Lord Ganesha.
2. Introduction.
3. On pregnancy and uterine development.
4. Description of the limbs.
5. On the nature of animals and their breeds.
6. Description of the body and life.
7. Knowledge of the deaf and dumb animals.
8. Signs of vicious animals.
9. Description of colour, etc.
10. Marks and signs, etc., like Sukti, conch shells.
11. Coloured spots differing from the general colour of the body.
12. On whorls, etc.
13. Strength of animals.
14. Gait, etc.
15. On the smell of their body.
16. Important defects of animals.
17. Detection of good smell, bad smell, etc.
18. Coloured spots and star in the face or tail, etc.
19. Age of animals and colour of their teeth.

APPENDIX 'B'—*contd.*

20. Description of different parts and their names.
21. Measurements of the parts.
22. On pedigree.
23. Locks of hair, etc.
24. Animals in health and disease ; strength and beauty.
25. Animals fit for kings—description of stables.
26. Feeding, watering, grooming, etc.
27. Indications and contra-indications.
28. Care of animals according to the 6 rithus or seasons of the year.
29. Different kinds of derangements caused by the affliction of wind in the body.
30. Indications of curability or incurability of diseases.
31. Complaints caused by derangement of bile in the body.
32. Complaints caused by affliction of phlegm.
33. Symptoms of digestion and indigestion.
34. Fatigue and weariness—their signs.
35. Signs of ill-health.
36. Knowledge of disease.
37. Details of the digestive tract.
38. Chapter on fodder grass.
39. Chapter on fodder grains.
40. Chapter on oils.
41. Chapter on meat and beef.
42. Chapter on milk
43. Rules of watering.
44. Rules of giving other drinks.
45. Signs of dystokia and its treatment.
46. Means of testing breast milk.
47. Sterility and its treatment.
48. Formula for giving linseed.
49. Formula for giving rice.
50. Formula for giving barley.
51. Formula for giving black gram.
52. Formula for giving wheat.
53. Formula for giving rice, *Dolichos biflorus*.
54. Formula for giving straw, *Eryum rirsutum*.
55. Formula for giving *Pannicum Italicum* and *Cyterus cajaz*.
56. Formula for giving Salt bolus.
57. Formula for giving Pepper bolus.
58. The three acrids compound.
59. Bolus of the three acrids.
60. Asafoetida compound with its 8 ingredients.
61. Citrus medica compound bolus.
62. Well seasoned Terminalia chebula.
63. Seven varieties of the above ; compound powder and plaster thereof.
64. Balasamodendron mukul and its compound.
65. *Allivum sativum* and its compound.
66. Aloe and its compound.
67. Sodium carbonate and its compounds.

APPENDIX 'B'—*contd.*

68. *Menispermum glabrum* and its compounds.
69. The three myrabolans and their compounds.
70. *Physalis flexuosa* and its compound.
71. Substances causing fainting and their antidote.
72. *Minosa octundra* and its compounds.
73. Uses of *Cypersus rotundus*.
74. *Picrorhiza kurrooa* and its compounds.
75. The three spices and *Terminalia chebula* compounds.
76. Cardamom compound electuary.
77. Grape compound electuary.
78. Sandal-wood compound electuary.
79. Cardamom compound of five ingredients.
80. Grape compound of 5 ingredients.
81. Sandal-wood compound of 5 ingredients.
82. *Cyperus rotundus* compound of 5 ingredients.
83. *Oldenlandia* compound of 5 ingredients.
84. The five barks.
85. *Ægle marmelos* compound of five ingredients.
86. *Zingiberis officinalis* compound of 5 ingredients.
87. *Solanum jacquinum* compound.
88. *Piper longum* compound of 5 ingredients.
89. Compound powder of the five spices and the three acrids.
90. The honey compound.
91. Infusions and decoctions.
92. Rules for vapour baths.
93. Rules for inunctions.
94. Rules for applying paste to the body.
95. Application of plasters.
96. Rules for bleeding.
97. Indications for the use of surgical instruments.
98. Rules for using medicated snuff.
99. Rules for medicated fumigation.
100. Rules for medicated inhalation.
101. Application of collyria.
102. Preparation of decoctions.
103. Massaging.
104. *Echites antidysenterica* compound ghee.
105. Ghee compound of 5 ingredients.
106. Ghee compound of *Mimosa sirisha* and 5 ingredients.
107. Compound oil of *Asparagus racemosus*.
108. Compound oil of the 10 roots.
109. Compound oil of *Gmelina arborea*.
110. Compound oil of *Mimosa octendra*.
111. Ointment of the 3 acrids.
112. Medicated wines.
113. Treatment of numbness of the tongue.
114. Treatment of bronchial catarrh due to afflicted wind.]
115. Treatment of bronchial catarrh due to afflicted bile.



APPENDIX 'B'—*contd.*

116. Treatment of bronchial catarrh due to phlegm.
117. Treatment of bronchial catarrh due to all the 3 doshas.
118. Treatment of bronchial catarrh due to external causes.
119. Twenty kinds of eye diseases and their description and treatment.
120. Diseases of the head, their description and treatment.
121. Diseases of the ear and their treatment.
122. Colic due to eating the grain *Paspalum frumentaceum* and its treatment.
123. Colic due to worms and its treatment.
124. Flatulence and its treatment.
125. Ordinary colic and its treatment.
126. Diseases of the bowels and their treatment.
127. Different kinds of diarrhoea and dysentery and their treatment.
128. Diseases due to defective grain ration and treatment.
129. Diseases due to oils and treatment.
130. Paralysis and its treatment.
131. Paralysis of neck muscle and its treatment.
132. Hiccough and its treatment.
133. Different kinds of cough and their treatment.
134. Pneumonia and its treatment.
135. Heart diseases and their treatment.
136. Intestinal worms and treatment.
137. Diseases of the stomach.
138. Urinary affections and their treatment.
139. A kind of fever and its treatment.
140. Inflammation of the cervical glands and its treatment.
141. Intumescence and treatment.
142. Skin diseases and their treatment.
143. A disease caused by the planet Mercury and its treatment.
144. Treatment of wounds, fistula and sinuses by venesection.
145. Ophthalmia and its treatment.
146. On heat. On fever of animals.
147. Different kinds of fevers, their description and treatment.
148. The six rithus of the year and their effect on the health of animals.
149. Treatment of tuberculosis.
150. Treatment of tumours.
151. Hydrocele, its different kinds and treatment.
152. Diabetes and its treatment.
153. On piles.
154. On diarrhoea and dysentery.
155. On insanity.
156. On unruly animals.
157. On Epilepsy.
158. On lameness due to shoulder sprains.
159. On sprung knee.
160. On sprained loins.
161. On sprained thigh.
162. On fractures.

APPENDIX 'B'—*contd.*

163. On urinary diseases.
164. On poisoning by castor plant.
165. On diseases of feet.
166. On extraction of arrows.
167. On poisoning by *Mimosa natans*, *Hydnocarpus inebriens*.
168. On cobra bite.
169. On snake bite in general.
170. On snake bite in general.
171. On poisoning.
172. On dysentery.
173. On fever among colts.
174. On diseases of the tongue.
175. On diseases of the teeth.
176. On diseases of the nose.
177. On Glaucoma.
178. Bruises and their treatment.
179. Cutaneous eruptions, herpes, etc.
180. Inflammations.
181. Mustard oil treatment.
182. Suppression of urine.
183. Bloody urine.
184. Strangury.
185. Coloured urine.
186. Split hoof.
187. Broken hoof.
188. Vital parts of the body.
189. Piercing wounds.
190. Evil eye.
191. Remedial measures to avert death among horses.
192. Bolus for colic.
193. Asafoetida compound bolus.
194. Rectal pledgettes for colic.
195. Collyria.
196. Garga's compound pill.
197. Vaiswanara's compound pill.
198. Worm infestation.
199. Medicated snuff.
200. Plaster for inflammation of the cervical glands.
201. Oily applications for inflammation of cervical glands.
202. Compound powder for rheumatism.
203. *Mimosa octendra* compound decoction.
204. Gait of horses.
205. Posology.
206. Horses as beasts of burden.
207. Origin of the speed of horses.
208. Mongoose gait of animals.
209. Peacock gait.
210. Tiger gait

APPENDIX 'B'—*contd.*

211. Camel gait.
212. Sarabha gait (a fabulous animal having 8 limbs).
213. Smell of animals.
214. Time for feeding animals.
215. Nature of food.
216. Food which should be avoided.
217. Articles that can be given along with food.
218. Quality of grain ration.
219. Quality of maize.
220. Quality of black gram (*Faciolue zadiatus*).
221. Quality of *Faciolus rotundus*.
222. Quality of *Dolichos biflorus*.
223. Quality of red grams.
224. Quality of barley.
225. Quality of *Panicum italicum*.
226. Effect of fumigation.
227. Method of fumigation.
228. Different views on fumigation.
229. Snuff for defective voice.
230. Compound powder for stimulating appetite.
231. Cardomom compound powder for bilious fever.
232. The three acrids compound powder.
233. Aromatic powder.
234. *Justicia adhathoda* compound bolus.
235. *Vitex negundo* compound bolus.
236. Pumpkin gourd salt.
237. Black pepper compound electuary.
238. Asafoetida compound electuary for Tympanitic colic.
239. Compound powder for biliousness.
240. Compound electuary for cough.
241. Collyria for eye.
242. *Vitex negundo* compound decoction for rheumatism.
243. *Calatropis gigantea* bark powder for rheumatism.
244. Yellow orpiment compound dusting powder for wound.
245. Asafoetida compound powder for stimulating digestion.
246. Plaster for inflammation of cervical glands.
247. Treatment for phlegmatic cough.
248. Parasitic colic.
250. *Mimosa octendra* compound snuff.
251. *Solanum jacquinum* compound snuff.
252. Turning round disease.
253. Treatment of dysentery.
254. Sore throat.
255. Oil for fistulous wounds.
256. Orris root compound oil.
257. Plaster for wounds.
258. Cardemom compound powder.
259. Uterine colic.

APPENDIX 'B'—*contd.*

260. Ordinary colic.
261. Plaster for rheumatism.
262. Plaster for phlegmatic complaints.
263. Oil inhalation for biliousness.
264. Medicated snuff for cervical gland inflammation.
265. Hydrocele.
266. Plaster for above.
267. Treatment for snake bite.
267. Collyrium for all eye diseases.
269. Compound powder of the 3 spices for all diseases.
270. Hollharrena antidysenterica compound electuary.
271. Parasitic colic.
272. Diseases of the foot.
273. Oil for inflamed nasal mucous membrane.
274. The ten roots compound decoction.
275. Pinus deodarus compound decoction.
276. Plaster for all kinds of lameness.
277. Decoction for bronchial catarrh.
278. Plaster for haemorrhoides.
279. Embelica Ribes compound snuff.
280. Grapes compound electuary for biliousness and cough.
281. Electuary for sore throat and cough.
282. Citrus auruntii compound snuff for all ailments of the head and eyes.
283. Withania somnifera compound infusion.
284. Grapes compound powder.
285. The three myrobolans decoction for all diseases.
286. Description of mud plaster.
287. The ten roots compound for use during the rainy season.
288. The 3 spices compound infusion for the cold weather.
289. Randia dumatoria compound for all ordinary ailments.
290. Acacia speciosa compound ghee for all kinds of rheumatism.
291. The five bitter compound dusting powder for all indolent sores.
292. Acorus calamus compound ghee for all ordinary ailments.
293. Sandal wood compound ghee for biliousness.
294. Myristica officinalis compound ghee for all wounds.
295. Cissampelos hernandifolia compound ghee for indolent ulcers.
296. Cuminum cyminum compound.
297. Cow's urine compound oil for all bad ulcers.
298. Asparagus racemosus compound oil for all kinds of rheumatism.
299. Solanum jacquinum compound oil for all kinds of cough.
300. Vitex negundo compound oil for rheumatism.
301. Apilotaxis auriculatas compound oil for all ailments of the head.
302. Phyllanthus embelica medicated wine for all urinary affections.
303. Colours of horses.
304. Good colours.
305. Bad colours.
306. The seven kinds of the origin of horses.
307. About the good quality and the high speed of horses.

APPENDIX 'B'—*contd.*

308. Mythology of horses.
309. Horses fit for kings.
310. Cause of the speed of horses.
311. Cause of the decline of speed.
312. Size of whorls.
313. Origin of good marks.
314. Origin of bad marks.
315. Important defects.
316. Diseases of teeth.
317. Diseases of tongue.
318. Absence of tongue.
319. Abnormal tongue.
320. Diseases of the face.
321. Diseases of the forehead.
322. Diseases of the eyes.
323. Diseases of the mane and hair.
324. Several kinds of abnormal and disproportionate limbs—about 25 kinds described.
325. Description of the several body fluids — 9 kinds.
326. Several miscellaneous topics.

VII. *Asvayurveda Siddhayaoga Sangrah*.—Catalogue No. 11251 (Burnell 12302).—Paper—Language and script—Sanskrit—2,800 slokas—Authorship is attributed to Salihotra. The work is in the form of a conversation between Salihotra and Susruta. This is the only rare manuscript attributed to Salihotra and the most original of all works on veterinary science. The manuscript is referred to in the India Office Catalogue. The whole work of Salihotra is a very big one and a list of the detailed contents as given in the beginning of this manuscript is reproduced below.

This manuscript corresponds to the one referred to by Girindra Nath Mukopadhyaya in his book on 'Surgery in Ancient India' as having been translated into Arabic by one Sayyad Abdulla Khan Bahadur Feroz Jung from a Sanskrit book which was secured from Chittor during an expedition to Mewar in the reign of Shah Jahan. The translated book is called 'Kitab ul-Vitart'.

The manuscript by itself is, however, incomplete and a perusal of its 1st chapter shows that the whole of Salihotra's work consists of 6 parts as detailed below :—

1st Part . . . . .	8 chapters . . . . .	800 slokas.
2nd „ . . . . .	20 „ . . . . .	2,000 „
3rd „ . . . . .	30 „ . . . . .	5,000 „
4th „ . . . . .	12 „ . . . . .	1,200 „
5th „ . . . . .	10 „ . . . . .	1,000 „
6th „ . . . . .	40 „ . . . . .	6,000 „
<hr/>		
6 parts . . . . .	120 chapters . . . . .	16,000 slokas.

The manuscript at Tanjore contains only the first two parts of 28 chapters with 2,800 slokas. The detailed contents of Salihotra's work as given in the beginning of his book are given below :—

## INTRODUCTORY.

1. On the origin of Ayurveda and of the science and treatment.
2. Initiation of disciples.

APPENDIX 'B'—*contd.*

## I.—Unnaya Sthana

## GENERAL SUBJECTS.

1. On the origin of horses.
2. Pregnancy and uterine development.
3. Nature of animals.
4. Colour of animals.
5. Four classes of animals.
6. Examination of all parts of the body of animals.
7. Description of different parts and their names.
8. Signs and characteristics of animals.
9. Whorls of hairs on the body of animals.
10. Age of animals.
11. Improvement of animals body.
12. Motion of animals and their paces.
13. Smell of animal's body.
14. Coloured spots which differ from the general colour of the body.
15. Marks and signs like sukti, conch-shell, etc., on the animal's body.
16. Inherent qualities of the animals.
17. Four types of diseases called Sarada in which there is difficulty in drinking fluids.
18. Measurement and size of animals.
19. On pedigree.
20. Animals in health and disease.
21. Ten parts of the animal's body.
22. Miscellaneous topics.
23. Race of animals.
24. Dosage of veterinary medicines.
25. On appropriate remedies ?
26. Beauty of animals.
27. On the management of unruly animals.
28. On running of horses.
29. On the purchase of horses, cows, etc.
30. On horses fit for kings.
31. On good and auspicious smell.
32. On puncture. Venesection.

## II.—Uttarasthana

## MISCELLANEOUS SUBJECTS.

1. On questions.
2. On the origin of the science.
3. On the three methods of diagnosis of disease.
4. On the signs and symptoms of moroseness, etc., indicating approaching death in healthy animals.
5. On colic pain with diarrhoea ?
6. On the varieties of colic pain.
7. On some disease of the chest.
8. On lameness of horses and other animals.
9. On the four kinds of defects in animals.

APPENDIX 'B'—*contd.*

10. On ophthalmia.
11. Anushná (Laziness or Sluggishness).
12. On the keeping and feeding of animals, during the six seasons.
13. On diseases of the feet.
14. On rise of temperature in animals.
15. On hiccough and asthma.
16. On fevers.
17. On jaundice.
18. On fainting and insensibility.
19. On worms.
20. On colic pain.
21. On running of discharge from the nose.
22. On cough.
23. On diarrhoea and dysentery.
24. On galactagogue medicines.
25. On bolus consisting of katuka (*Picrorrhiza kurroa*, Benth.)
26. Natapitta or Phlegmatic or bile diseases.
27. On prolapse of rectum.
28. On hæmorrhage from the internal organs.
29. On the treatment of a tooth which grows upon another.
30. On swelling in the leg in kurcca or diseases of the heel (incurable) *Epizootic Lymphangitis* ?
31. On different varieties of snakes and their characteristics.
32. On symptoms and treatment of snake-bite.
33. On defects of horses, cows, buffaloes, etc.
34. On the speed of a horse.
35. On the signs and symptoms of poisoning.
36. On signs when pierced by a poisoned arrow.
37. On chronic diarrhoea, Sprue.
38. On the method of securing or tying animals.
39. On toxicology and treatment of poisons.

**III.—Srirakam**

## (ANATOMICAL OR HISTOLOGICAL).

1. On the formation of the embryo.
2. On the anatomy of the different parts of the body.
3. On the formation of the body. Development of parts of the body in the uterus.
4. On the vessels and nerves of the animals.
5. On the habitat of animals.
6. On vicious horses.
7. Raktamokshana (Bleeding or blood-letting).
8. On various measures.
9. On the construction of stone reservoirs for drinking water.
10. On treatment.
11. On dumb, blind and deaf animals.
12. On diseases of shoulder joint ?
13. On grasses as food for animals.
14. On swelling or intumescence.

APPENDIX 'B'—*contd.*

15. On two kinds of wounds caused by external and internal causes.
16. On urination and its retention.
17. On fasting and other methods intended to make the horse light and nimble.
18. On the methods of making a horse strong.
19. On the management of difficult labour due to malpresentation.
20. On the extraction of deep seated salya or splinters.
21. On the extraction of foreign bodies and arrows.
22. On the treatment of sinus and fistula.
23. On the treatment of tumours.
24. On facial paralysis.
25. On treatment of diseases of female reproductive organs.
26. On treatment of diseases of semen of animals.
27. On signs of pregnant animals.

IV.—*Cikitsita Sthanam*

## ON TREATMENT OF VARIOUS DISEASES.

1. On some nervous diseases.
2. On some diseases of corners of eyes.
3. On treatment of a disease of mouth, wherein the horse suffers from swollen palate and cannot eat grass. On the influence of Revanta (a mythological planet).
4. On treatment of sores on tongue causing its paralysis.
5. On treatment of sores within the nostrils and running from the nose (Glanders).
6. On treatment of tonsillitis. Ulcer in throat.
7. On treatment of headache.
8. On treatment of tympanitis or flatulence.
9. On treatment of diarrhoea.

V.—*Kisoracikitsa*

## TREATMENT OF COLTS.

1. On miscellaneous topics, as diseases of ears, etc.
2. On Planets and their influence on horses.
3. On the different varieties of fever.
4. On diseases of skin ; scabies ?
5. On Intestinal worms.
6. On fractures of bones.

VI.—*Uttarottaram*

## SUPPLEMENTARY COPIES.

1. On the construction of stables ?
2. Worship of Revanta.
3. Expiation for the evil influence of nine planets.
4. Worship of Lakshmi.
5. On the influence of Svati star ?
6. On waving lights before an image, sprinkling of water for bliss and peace and on the expiatory ceremonies for the cure of diseases and safety of horses and elephants, cattle, etc.
7. After Nirajana (a religious ceremony) of horse, the ceremony was repeated before the king.
8. On prophylactic measures against diseases of horses cows, buffaloes, etc.



APPENDIX 'B'—*contd.*

## VII.—Siddhistanam

## COMPLICATIONS OF IRRATIONAL TREATMENT.

1. On diseases caused by the use of oleaginous articles of diet.
2. On diseases caused by the use of milk as an article of diet.
3. On diseases caused by the use of wine as an article of diet.
4. On diseases caused by the use of rice as an article of diet.
5. On diseases caused by the use of salts, etc., as articles of diet.
6. On dangers from the use of tubular instruments for enema, etc.

## VIII.—Bahasva Sthanam

## ON SOME MYSTERIOUS TOPICS.

1. On lines, their positions and importance.
2. On the duration of life.
3. On signs of death. Prognostications.
4. On kalpas or various prescriptions of medicines.
5. On complications foreboding death.
6. On signs of death caused by the influence of stars.
7. On the preparations of Rasona (garlic) or *Allium sativum*.
8. On the preparations of haritaki (myrobolana) or *Chebulic myrobolana*.
9. On the preparations of Guggulu (*Balsamodendron mukul*).
10. On the preparations of sarshapa (mustard) or *Brassica campestris*. L.
11. On the preparations of lac.
12. On the preparations of Triphala.
13. On the preparations of resin.
14. On remedies to prolong life.
15. On remedies which stimulate sexual power.
16. On the training of horses & other animals.
17. On the management and nursing of foals.
18. On weights to be carried by horses, bulls, etc.
19. On various arrangements of cavalry in war.
20. On the methods of yoking a horse to a chariot.
21. On management of stables.
22. On mantras, charms or incantations.
23. On remedial measures.
24. On the Rahasyopanishad.

VIII. *Asva Sastra*.—This illustrated book embodies the teachings of sages Salihotra, Dinapati, Garga, Nakula, Gana, Vaisampyama, Malladeva Pandita and others. Eight chief characteristics of animals are described under the following head :—

1. The cast of the body—84 parts of the body are described on page 24.
2. The natural dispositions.
3. The colour.
4. The motion or the gait.
5. The voice.
6. The smell.
7. The brilliance or lustre.
8. The curl of hair, and other marks.

The life of a horse is said to be 32 years and is divided into 10 periods of 3 years, 2 months and 19 days each.

APPENDIX 'B'—*contd.*

The chief parts of the body are then described, and then follows in detail a description of the various parts of the body. At page 8, the eight chief marks are illustrated.

Illustrations of the colour of horses are given in pages 54 to 78.

Horses that neigh at sight of particular objects are classed as lucky or unlucky horses—pages 86—89.

The smell of horses is then described—pages 89—90.

Then follows a description of the gaits of horses.

Pages 105—119 describe and illustrate unlucky horses, first in respect of their physical features and then in respect of their shape or form of their eyes such as those resembling the eyes of mongoose, buffalo, vulture, cat, etc., and thirdly in respect of the hair, such as the hair getting matted, grasslike or having dividing lines, etc.

Pages 119—133 describe and illustrate about 54 families or stocks, that come from different countries.

The age of horses is said to be ascertained with reference to their hoofs, hair, teeth movements of the limbs, neighing, excreta, urine, etc. Pages 134—137.

In page 137, there is a Sanskrit verse stating the ripe and full age for:—

1. Man . . . . .	120 years.
2. Elephant . . . . .	120 "
3. Cow . . . . .	24 "
4. Ass or Camel . . . . .	25 "
5. Dog . . . . .	16 "
6. Fox . . . . .	25 "
7. Worm . . . . .	7 days.
8. Fly . . . . .	14 "
9. Horse . . . . .	32 years.

Pages 154—159 describe the feature which indicate the longevity or otherwise of the horses.

Directions as to the posture to be adopted by the rider are given at page 165.

IX. *Gajavaidyam*.—Catalogue No. 11259 (Burnell 10772c)—With commentaries—Palm leaf—117 leaves—Language—Sanskrit—Script—Telugu—1,700 slokas—Author ?—Incomplete—Not printed. This manuscript is in a worn out condition. Deals with the several kinds of diseases of animals and prescriptions for their cure.

X. *Gajalakshana Chikitsa*.—Catalogue No. 11260 (Burnell 12296)—Paper—Sheets 29—Language and script—Sanskrit—465 slokas—Author Veda Vyasa—Complete—Not printed. It appears that this is a portion of a bigger work called *Hasthyayurveda* by Veda Vyasa.

XI. *Gaja Sastram*.—Catalogue No. 11262 (Burnell 10772c) —Palm leaf—Leaves 63—Language—Sanskrit—Script—Telugu—Author Vaisampayana—1,000 slokas—Incomplete—Not printed. It is mentioned in this work that this is a portion of *Brahmanda Purana*.

XII. *Gaja Sastram*.—Catalogue No. 11263 (Burnell 12295a)—Paper—Sheets 4—Language and script—Sanskrit—100 slokas—Author Vaisampayana—Incomplete—Not printed.

XIII. *Gaja Sastram with Telugu commentaries*.—Catalogue No. 11264 (Burnell 10772d) —Palm leaf—Leaves 54—1,400 slokas—Language—Sanskrit—Script—Telugu—Author Vaisampayana—Complete—Not printed. From the Colophon it is found that this is a portion of *Brahmanda Purana* and a continuation of the work on *Gaja sastram* described under XI above.

XIV. *Gaja Sastram*.—Catalogue No. 11265 (Burnell 12293)—Paper—Sheets 252—Language and script—Sanskrit—5,275 slokas—Author Palakapya—Incomplete—Not printed. This work seems to have been called *Saraswathi Kanthapharana* also. This is an original treatise on veterinary science attributed to *Palakapya Muni* and is in the form of instructions given by him to a king called *Romapada*. This is one of the authoritative manuscript on veterinary science dealing comprehensively with all the diseases and their treatment.

APPENDIX 'B'—*contd.*

There are several manuscript under this head and it is possible that all these can be compared and a complete book compiled.

XV. *Gaja Sastram*.—Catalogue No. 11282 (Burnell 10737)—Palm leaf—Leaves 354—With Telugu commentaries—Language Sanskrit—Script Telugu—9800 slokas—Complete—Not printed. *This manuscript is in a good condition and is one of the most original and useful manuscripts on veterinary science.*

XVI. *Gaja Sastram*.—Catalogue No. 11287 (Burnell 15648)—Paper—Sheets 342—110 slokas—Language and script Sanskrit. There is a Maharathi rendering done by Maharaja Sherfoji of Tanjore. The sanskrit portion is a compilation from the works of Vaisampayana. This is one of the most valuable manuscript of this library with copious illustrations containing as many as 300 coloured diagrams.

Pages 96—127—The growth of the infant elephant is well described, from the 1st month to the 10th year, when the animal is said to attain maturity.

The age of the elephant is given as 120 years, which is divided into 12 periods of 10 years each, each period being called a Dasa. The condition of each Dasa is described—Pages 128—135. *Then follows a long description of the elephants of each of the old divisions of India, Kambhoja, Pullinda etc.* The name of the countries are given in page 135.

Pages 136—145—Methods of capturing elephants are described. Elephants are then classified according to their colour, a number of colours and their combinations are illustrated. White, Black, Red, White and Black, White and Red, Black and Red etc.

The smell of elephants, their cries, marks and nature etc., are then described.

## GOVERNMENT ORIENTAL MANUSCRIPTS LIBRARY MADRAS.

I. MSS. No. 13317.—*Asvaprakasana*—Sanskrit—4 pages—A short essay on the importance of Animals as explained by Salihotra to Susruta.

II. MSS. No. 13318.—*Asvalakshna Sastra*—With Telugu commentary—Author Salihotra—About 150 pages—Consists of 8 parts as follows:—

1. Examination of animals.
2. Examination of their colour.
3. Description of the marks, spots, and smell of animals.
4. Description of the good and bad whorls of horses.
5. Knowledge of their age.
6. Knowledge of their life.
7. Nursing and feeding.
8. On pregnancy.

Reference is made in this book to a bigger treatise by one Simhadatta—Not printed.

III. MSS. No. 13319.—*Aswayurveda* or *Siddha Sangrah* and MSS. No. 13320—Same as 13319—The former is in Sanskrit and the latter in Canarese with Canarese commentary. The former is incomplete in the last portion. Both the above manuscripts can be compared and a complete book compiled. The authorship is attributed to Gana who professes to summarise the treatises of Salihotra, Susruta and Garga etc. The book consists of 6 parts:—

1. Description of breeds, pedigree, colour, age, marks etc.
2. Administration of medicines.
3. Medicines.
4. Diagnosis.
5. Treatment.
6. Vital parts.

This book is incomplete at Madras and does not appear to correspond with the Tanjore manuscript No. P. P. S. 11257 (Burnell 12312) which is complete—Not printed.

APPENDIX 'B'—*contd.*

IV. MSS. No. 13321, 13322 and 13323.—3 volumes—Asvayurveda—Author not known. The following are the detailed contents thereof :—

## Vol. I—

1. Whorls on animals.
2. Their colour, marks and spots.
3. Description of the body.
4. Description of all the limbs.
5. Description of confirmation—malformation and deformities.
6. Description of spots on their body.
7. Breeds and the places of origin.
8. Rules for bathing.
9. Purification ceremonies.
10. Knowledge of age.
11. Places of their birth etc.
12. Where they are bred etc.
13. Sthana Samsthanavarta Niroopanadhyaya.
14. Rules for administering medicinal ghee.

## Vol. II—

1. Praise to the God of fire.
2. Stable requirements.
3. Medicated drinks.
4. Administration of salines.
5. Watering.
6. Use of surgical instruments.
7. Grooming.
8. Arasthapana Vidhi.
9. Thirivrutha Niroopana.
10. Attention to animals while sweating.
11. Application of anointments.
12. Medicated ghee.
13. Treatment of the 14 complaints due to planetary influences.
14. A kind of fever.
15. Medicated wines.
16. Administration of salts.
17. Properties of grains.
18. Properties of milk.
19. Diseases of the pulse.
20. Medicated fumigation.
21. Description of lines on the body.
22. Sutrasangrahadhyaya or Summary of daily routine.
23. Adisutradhyaya or Primary rules of conduct while attending on a horse.
24. Manaprasannadhyaya or Making a horse more active.
25. The 3 kinds of diagnosis of diseases.
26. Vicious animals.
27. Profuse diarrhœa.
28. Description of good marks on the bod.
29. Bad marks on the body.
30. Animals having some special marks.
31. Diseases of urine.
32. Lucky marks.

APPENDIX 'B'—*contd.*

33. Diseases caused by Tympany.
34. On the 10 parts of the horses' body.
35. Diseases of the chest.
36. Tenderness of the sole of the foot.
37. Koorchalingadhyaya.
38. Adhyastalingadhyaya.
39. Janvadilingadhyaya.
40. Shoulder lameness.
41. Trikalīngi tadhyaya.
42. Vimsatīlingadhyaya.
43. Anuprasannadhyaya.
44. Description of 6 rithus and their effect on horses.
45. Attention to the feet of horses, bulls, etc.
46. A kind of fever.
47. Hiccough and its treatment.
48. Respiratory diseases and treatment.
49. Kind of fevers.
50. Origin of pregnancy and its description.
51. Formation of the fœtus.
52. Development of fœtus.

## Vol. III—

1. Size of the body according to the country.
2. Heena Thirktadhyaya (defects).
3. Classification of 9 kinds of animals.
4. Natural causes of disease.
5. What ought to be done for animals and when.
6. Construction of stables.
7. Grass fodder and their description.
8. Grain rations and their description.
9. Rules for feeding and watering.
10. Adhika chikitsadhyaya (Irrational treatment).
11. Description of solids in the body.
12. Description of fluids.
13. Effect of juicy grass.
14. Tumour.
15. Treatments of wounds.
16. False pregnancy and its treatment.
17. Extraction of arrows and bullets.
18. Treatment of arrows and bullet wounds.

V. MSS. No. 13327—Manapriyamata—Author not known—Language and script Sanskrit—29 pages—Not printed—Some of the last portion is lost. Treatise on the characteristics of good and bad animals with hints for finding out their age, colour etc.—Consists of 6 parts :—

1. Nature of animals.
2. General confirmation and the proportion of their bodies and limbs.
3. Knowledge of age.
4. Their colour.
5. Mixed breeds and colours.
6. Marks, whorls, spots etc.

## APPENDIX 'B'—contd.

VI. *Yuktakalpataru of king Bhoja*.—11th century A. D. —Language and scripts: Sanskrit—Chapters 93 to 113 :—

- Chapter 93.—Origin and examination of animal.
- Chapter 94.—Description of the body and limbs.
- Chapter 95.—Their colour and age.
- Chapter 96.—Lucky signs.
- Chapter 97.—Lucky and unlucky marks, whorls etc.
- Chapter 98.—Bad animals.
- Chapter 99.—Riding etc.
- Chapter 100.—Training etc.
- Chapter 101.—Venesection.
- Chapter 102.—Period of menstruation, and precautions to be taken.
- Chapter 103.—Examination of elephants.
- Chapter 104.—Qualities of elephants.
- Chapter 105.—Defective elephants.
- Chapter 106.—Examination of bulls.
- Chapter 107.—Qualities of bulls.
- Chapter 108.—Bad bulls.
- Chapter 109.—Examination of Buffaloes.
- Chapter 110.—Examination of Deer.
- Chapter 111.—Examination of Dogs.
- Chapter 112.—Examination of Sheep and Goats.
- Chapter 113.—Examination of All animals generally.

VII. *Agnipurana*.—Printed :—

- Chapter 287.—Treatment of elephants.
- Chapter 288.—Riding of horses.
- Chapter 289.—Treatment of horses.
- Chapter 292.—Treatment of cows.

VIII. *Sivatava Ratnakara by Basava Mantri*.—About 1700 A. D.—Language and script Sanskrit.—Printed. Contents are :—

*Kallola VI. Chapter 26*.—The origin of serpents. Their varieties and nature. Their life period and changes at different stages. How to determine the kind of serpent which has bitten. The place of secretion of poison—108 slokas.

*Kallola VII. Chapter 11*.—Elephants, their origin and the forest where they were born; good and bad points of elephants; their qualities, height and varieties; how to measure them. Those fit for riding. 18 kinds of mixed breeds; their varieties; characteristics and colour of the body; average life of elephants and their sense of duty. Elephants—place for examining and training them. Their hair, skin, jaws, tail, eyes, breast curls etc., rut, places wherefrom it flows, its smell etc., female elephants; Mahauts etc.—223 slokas.

*Chapter 12*.—Seven kinds of horses. Mules. Their origin and varieties. Story of how horses had wings and how, after a curse, the wings were lost and the strength thereof was transferred to the legs. Nature of horses. How to find it out. 8 characteristics—a knowledge thereof—shoulder, back, legs etc., tests, measurements etc., heights, varieties, good and bad points according to height, 5 colours; bad horses and their characteristics. Various sounds of neighing; what they signify. Description of whorl and their effects. Teeth—ascertaining age by examining them. 221 slokas.

*Chapter 13. Qualities of horses born in 54 countries and all other details about them*.—Qualities to be chiefly found in horse. How to ride? How to control horses of various kinds? When and where to beat horses. 5 kinds of motions. Superiority of the horse in the animal kingdom. What may be kept near the stable and what not etc. Bullock etc., their characteristics. The account of their curses, marks, body, colour, hoofs, tail etc., and treatment for diseases, covers 249 slokas.

APPENDIX 'B'—*contd.*

*Kallola VIII. Chapter 4.*—Cock fighting. Cocks—their colour, form etc., as an index to their capacity. Cocks classified. Their food. Various motions as index. Their feathers. When the feathers sprout and when they fall down. What classes win. Other classes of fowls. How to pacify the defeated cock (red spur fowls)—varieties thereof. When they lay their eggs. Their breeding, fighting etc. Judging strength by the size of their breed.

Parrots—their colour and food.

Sheep and goats detailed information about them.

Dogs etc. 86 slokas.

IX. *Hayadipa*.—A book on veterinary science (MSS. NO. 444, Travancore Library)—Author not known—Contains about 400 lines—Paper—Language and script Sanskrit.

## ADYAR LIBRARY MADRAS.

I. *Asva Vaidyaka by Salihotra*.—Paper manuscript—Not printed—290 pages—With commentary by one Anantha Bhattaraka—Language and script Sanskrit. Consists of 25 prakaranas or chapters. A detailed treatise on veterinary science.

II. *Palakapya's Hasthyayurveda*.—Science of elephantology—appears to be a copy of Tanjore manuscript—Detailed contents given elsewhere. *Vide* under Tanjore Catalogue (XV Tanjore Collection).

## MANUSCRIPTS COLLECTED IN ORISSA PROVINCE.

I. *Asva Sastra*.—Palm leaf manuscript—Author—Garga—Language Sanskrit—Script Oriya—About 1500 slokas—101 folios or 202 pages—Consists of 3 main divisions or 12 parts. This is one of the manuscripts which was not hitherto found elsewhere in India. Its brief contents are :—

1. Introduction.
2. Places where available, breeds etc.
3. Description of the body.
4. Measurements of the body and limbs.
5. Good and bad marks, whorls, coloured spots etc.
6. Different kinds of gait.
7. The colours of horses.
8. Accidental calamities.
9. General hygiene.
10. The smell and its significance.
11. Knowledge of age and life.
12. Breeds—their merits and de-merits.
13. Diseases of the face and their treatment.
14. Eye diseases and their treatment.
15. Diseases of the head and treatment.
16. Hoarseness and its remedy.
17. Diseases of the ear and treatment.
18. Cough and asthma—their description and treatment.
19. Hiccough and its remedy.
20. Treatment of wounds.
21. Inflammation of the nasal mucous membrane.
22. Fevers, their description and treatment.
23. Indigestion and treatment.
24. Lameness and treatment.
25. Dysentery and treatment.
26. Colic and its treatment.

APPENDIX 'B'—*contd.*

27. Intestinal worms and treatment.
28. Diseases of the urine and treatment.
29. Intestinal diseases.
30. Jaundice and dropsy.
31. Mania and treatment.
32. Pulmonary consumption.
33. Rheumatism.
34. Insanity.
35. Tuberculosis.

II. *Asva chikitsa*.—Palm leaf—Language and script Oriya—The manuscript is known by the name of Sarvatra Chintamani. Translated into Oriya by one Kripa Sindhu—Contains 57 folios or 114 pages. The manuscript is incomplete—Appears to be a true translation of the previous manuscript i.e., *Asva Sastra* by Garga.

III. *Asva Sastra*.—Paper manuscript deposited in the provincial museum of Orissa. This is an Oriya translation of 'Haya Pradipa' by Sri Suhora. This has been copied from a manuscript available with the Raja of Khalikote, Ganjam District—Consists of 119 pages, dealing with the several diseases, their description, diagnosis and treatment, age colour and life of animals and breeds etc., riding and training of animals, construction of stables, control of unruly animals, general hygiene, feeding and watering, good and bad marks etc. Besides, full details, description, diseases and their treatment, age, good and bad marks etc. of camels, bulls, and buffaloes and other animals are also given.

## OTHER COLLECTIONS.

I. *Gajayurveda*.—Printed Anandasrama Press Edition. The book is incomplete. There are several omissions here and there, probably due to the non-availability of those portions in the original manuscripts from which the printed edition was compiled. The author of this compilation says that the book was compiled from 4 manuscripts, viz., 2 available at Jaipur, one at Poona and one at Calcutta. Complete manuscripts of this work are available in other places also, such as Cochin, Travancore, Tanjore, Kashmir etc. It would be better if copies of all these are sent for and compared with this printed edition, so that all the omissions in the latter may be filled in, and a complete and fully comprehensive edition may be brought out. I have definitely ascertained that some chapters containing useful information found in other manuscripts are not included in the printed book. Detailed contents are :—

I. **Maharogasthanam:**

## MAJOR DISEASES

1. Introduction.
2. Rules for feeding of animals.
3. Causes of death.
4. The 4 main sections of the book :—
  - (1) Major diseases,
  - (2) Minor diseases,
  - (3) Surgery, and
  - (4) the supplement.

The number of chapters are 18, 72, 34 and 36, respectively. The total number of slokas would be about 20,000.

5. Description of animals and their chief characteristics.
6. Initiation of the disciples. The requisite qualifications of a good student; the ceremonial rites to be observed. Qualifications of a good teacher, the relation between the teacher and his disciples and their mutual responsibilities. Origin of the science from the Atharvaveda. The fitness of students belonging to the Brahmana, Kshatriya and Vaisya caste. The teachers are prohibited from teaching the science of animals to the athiasts.



APPENDIX 'B'—*contd.*

7. Two classes of diseases—*inherent and accidental*. 76 nervous diseases; 27 bile diseases; 32 phlegm diseases; 15 blood diseases; 22 sannipatic diseases; 14 nervous bile diseases; 16 nervous phlegm diseases; 7 nervous—blood diseases; names and number of mixed diseases; the total number of *inherent* diseases; names and number of the *accidental* diseases; curable, incurable and curable with difficulty.
8. The origin of fever.
9. The different names of fever in different animals.
10. Tetanus. Three kinds—Antarayama (Emprosthotomus), Vahirayama (Opisthotonus) and Vyaviddhaskanda. The first variety is curable and the latter two are stated to be incurable.
11. Anæmia or chlorosis? Origin and treatment of the varieties of the disease as caused by vata, pitta and slesma.
12. On flatulence. The different varieties of the disease according to different causes excessive eating, rice-eating, earth-eating etc.
13. Swooning or fainting. 12 kinds of the disease; caused by excessive food, eating of rice and incompatible food stuffs water, wine, grasses, vayu, pitta slesma etc.
14. Diseases of the head, 27 kinds; caused by vata, pitta, slesma and their combinations and by worms.
15. Diseases of the foot, 30 kinds; 9 kinds of accidental diseases. Description and treatment of the different varieties.
16. 8 kinds of dangers from oil, ghee, fat, milk, wine, rice, water and irregular administration of diet, their origin and treatment.
17. On anasarca; its 7 kinds; their origin and treatment.
18. Different modes of vapour baths.
19. Various forms of eye diseases; their origin and treatment.

**II. Ksudrarogasthanam:**

## ON MINOR DISEASES.

1. Vomiting; its two kinds:—
  - (1) dosaja: due to defect of humours;
  - (2) agantuka:—external or accidental; their origin and treatment.
2. Treatment of Diarrhœa; its two kinds—gastric and intestinal, their prognosis and treatment.
3. Swooning caused by the use of madana plant (*Randia dumetorum*). Its pathology and treatment.
4. Wasting caused by the excessive eating of unwholesome diet, diseased grass, poisonous plants and fruits.
5. Diseases caused by excessive work, their pathology and treatment.
6. Signs and symptoms of poisoning. The symptoms vary according as one or more of the ten essential structures of the body are involved, *viz.*, skin, flesh, bones, etc. The Symptoms of poisoning have been dealt with under 7 different stages.
7. Poisoned arrows and treatment.
8. On snake-bite and its treatment:—3 methods of biting, 4 kinds of snakes Treatment varies accordingly.
9. Boils, their origin, prognosis, and treatment.
10. On the influence of the planets.
11. Unruly animals and their control.
12. Erysipalas:—its 5 kinds, their pathology and treatment.
13. Nervous and anxious heart caused by fear.
14. 2 varieties of the above—Dosaja and Agantuka.

APPENDIX 'B'—*contd.*

15. Diseases of the penis :—2 kinds, external and internal, and their treatment.
16. Affection by planets ; its prognosis and treatment.
17. Mental disorder, its origin and treatment Prediction of the time of death.
18. Stoppage of urination, defæcation and flatus, its origin and treatment.
19. Lymphangitis ; its 3 kinds due to 3 humours, and their treatment.
20. Unnatural movements due to the derangement of vata.
21. Wry neck, accidental pain in the shoulder and neck.
22. Weakness due to over stimulation of the animals by intoxication.
23. Debility.
24. Loss of strength.
25. Phlegmatic appearance due to diet which causes an increase of phlegm.
26. Cleaning of mouth.
27. Wounds of the plantar surfaces of the feet.
28. Inflammation and pain in the throat.
29. Signs of thirst.
30. Prickly tongue.
31. Signs and symptoms of possession by supernatural beings such as Kamakhya etc., and their treatment.
32. Insanity, its origin and treatment.
33. Hysteria or Epilepsy. Worship of 9 planets to rectify their evil influences.
34. Acute rheumatism ? Its origin and treatment.
35. Unruliness due to heavy weight.
36. Wasting of muscles, its origin and treatment.
37. Signs, symptoms, pathology and treatment of the disease caused by eating worms which live on the leaves of trees.
38. Chronic inflammation of the lungs. Its origin and treatment.
39. Inflammation of the scrotum, Hæmatocele ? Its origin and treatment.
40. A variety of diseases of foot, severe inflammation of foot and nails.
41. Warts, their causation and treatment.
42. Treatment of old age.
43. Tired animals and lassitude.
44. Diseases of the digestive tract, dyspepsia ? Its origin and treatment.
45. Care and treatment of the young animals.
46. Insanity during the night ? Its cause and treatment. Influence of Rakso-graha and its remedy.
47. Retention of urine, dysuria, strangury bloody urine, its treatment, incurability of rupture of the urinary bladder.
48. Puerperal fever, its pathology and treatment.
49. Diseases of the teeth, 4 different classes, their number and treatment of their diseases.
50. Mental derangement caused by fear, shyness oppression etc.
51. Colic pain ; its 2 varieties, its primary origin ; Siva's anger towards Madana.
52. 4 types of the Sarda disease, its main cause — want of exercise ; its prominent symptom—difficulty in drinking fluids.
53. The bites of the honey-bee and their treatment.
54. Soils and on the habit of earth-eating, the diseases caused thereby and their treatment.
55. Treatment of the 3 kinds of chronic diarrhoea, sprue.
56. Treatment of dysentery, its causation and pathology.

APPENDIX 'B'—*contd.*

57. Intestinal worms, their origin and treatment.
58. 4 kinds of weakness, 10 kinds of wasting pathology and treatment of preliminary Pthysis.
59. Discharge of mada, 14 causes and 5 kinds of the diseases thereof.
60. Worms which frequent the hairs and the ears, their causes and treatment.
61. Diseases of the ears, their cause and treatment.
62. Loss of appetite and its treatment.
63. Digestive fire, its seat and functions.
64. 5 kinds of inflammation in the chest and abdomen.
65. Animals which have been excessively worked. An animal whose strength is spent up.
66. Tumours, their 5 kinds and treatment.
67. Diseases of the heart, their 3 kinds and treatment.
68. Diseases of the skin, their 4 classes and treatment.
69. Skin diseases caused by external causes. Accidental skin diseases.
70. 12 kinds of skin diseases and their treatment.

## III. Salyasthnam.

## SURGERY.

1. On two kinds of wounds caused by external and internal causes. The subject is dealt with in detail and the author describes it under the following heads: signs and symptoms of 3 kinds of Yoni (cause), 8 kinds of Adhithana (seat) 2 kinds of Srava (Discharge) pure and impure—24 varieties of wounds according to Vastu (substance), 3 kinds of Atmanan (nature), curability or incurability, 2 kinds of Salya (splinters), 5 kinds of upakarma (treatment)—6 kinds of Dosa (defects), and medicines for ointments healing by granulation etc.
2. Symptoms of fresh wounds inflicted by lions, tigers, etc.
3. Treatment of fresh wounds—signs indicating death.
4. 6 kinds of surgical procedures.
5. Origin and symptoms of ulcers—21 kinds of ulcers—suppurating ulcers. 44 methods of treatment.
6. 5 elements. 7 dhatus, 4 kinds of animals, 5 pranas, 4 minds. On the functions of the body and digestion of food, treatment of animals.
7. Pregnancy—on the formation of the foetus—its monthly growth—the structures derived from the sire and the dam.
8. Pregnancy—menstruation—signs of pregnancy—formation of the foetus—its development—the sex of the foetus—white and black spots on the skin.
9. Anatomy—the number and descriptions of teeth, nails, vital parts, vessels, nerves, bones, ligaments and joints, the seat of the 3 humours.
10. Sharp instruments and actual cautery; their uses—the modes of their application.
11. On the blunt instruments—their uses—manufacture—the names of trees and pillars to be used in making handles—prayer to gods.
12. On the extraction of foreign bodies, splinters, arrows etc. Teachers of medicine from Brahma onwards—symptoms of injuries caused by salyas which pierce external and internal structures—extraction of arrows from special regions—incurability of wounds on the vital parts.
13. Abscess—its 4 kinds—their origin and treatment.
14. Treatment of ulcer—its two kinds and prognosis.
15. Fistula and sinus—their origin prognosis and treatment by knife cautery and caustics.
16. Vessels and venesection, 700 vessels—their location—vessels conveying 7 dhatus and 3 humours—venesection in special cases and their treatment.

APPENDIX 'B'—*contd.*

17. Treatment of sinus caused by diseases of tooth.
18. Treatment of extra tooth—Normal number of teeth is 16—2 extra teeth are found sometimes.
19. Venesection—107 vital parts—their description—number of vital parts which, when injured, cause immediate death or death after some time.
20. Vital parts—107 in number—their description.
21. Bite of dogs—4 kinds of dogs—the cause of their poisonous nature—the 3 stages of action of the poison and their treatment.
22. Detailed description of wounds of vital parts and their treatment.
23. Same subject continued.
24. On defects. On the origin of fevers in young animals—description of the seats of the humours.
25. Treatment of burns by means of fomentation ointments, etc.
26. The spiders—their classification—21 kinds, names, their poison and treatment.
27. The Treatment of bites of poisonous insects—their names, number, etc.
28. Snake-bite—classes of snakes, their bites, pathology and treatment—symptoms in an incurable case.
29. The method of using 10 different kinds of sharp instruments, knife, bistouri extraction of arrows.
30. Preparation and use of caustics or cautery.
31. Fractures and their treatment—their causes, classes, descriptions, prognosis and treatment.
32. Difficult labour and its treatment, signs of a dead foetus, methods of its extraction by excision of obstructing parts, etc., favourable and unfavourable cases and their treatment.
33. Extraction of teeth of animals; method to be adopted; the difference in structure of the different teeth.

## IV. Uttarasthanam.

## THE SUPPLEMENT.

1. Drinking of oleaginous medicines; 2 kinds of fat, animal and vegetable and their differences; ghee and oil, time of their administration, their measure and dosage.
2. Modes of drinking the oils and fats, the proper and improper times of their administration; good and bad results of their daily use.
3. Methods of taking food and drink. 3 kinds of animals—good, intermediate and bad; the difference of ages; 4 kinds of food stuffs; (1) to be chewed (2) to be swallowed, (3) to be drunk and (4) to be sucked; 3 divisions of the food that are sucked; measure of rice and treacle as food; defects and merits of wine as a drink; milk and dadhi as articles of food; sali rice, barley, pulses and wheat as articles of diet; on washing of the body, cleaning of the head and washing of the teeth and eyes.
4. On anointments; their 9 kinds; Gargya's opinion; time for drinking oils; on fat and marrow; influence of seasons; on the administration of fresh oleaginous medicines; enemas and their uses; oils and their uses;
5. Administration of 9 kinds of enema.
6. Stables—their size, construction, soil, planetary influence; seasons.
7. Snuffs—their use and abuse; consequences of its use in sufficient, insufficient and excessive doses.
8. Use of grass as food—use of green and dry grass according to the season and months.
9. Prognostications—signs of death-symptoms which predict unfavourable results.

APPENDIX 'B'—*contd.*

10. Modes of artificial preparations of the elephants teeth to fit them for use in war, fight with animals, self protection and beauty, etc., the teeth fit for such operations are modelled by the artists, Different classes of the teeth, their measure, etc.
11. Derangements of the rasas of the body—the chyle, semen, etc., and their defects.
12. Mode of feeding animals with sugar-cane.
13. Modes of giving snuffs to animals.
14. Various methods of using collyrium on animal's eyes—Vijaya gutika its preparation and uses—different kinds of collyrium and prescriptions for eye diseases.
15. Nursing of animals during the six seasons—their food and drink in different seasons—on baths and fomentation etc.
16. Reason why the drinking of water during a meal is not recommended.
17. Use of salts for digestion of food-stuffs and the use of condensed milk for increase of muscles.
18. Use of sour gruel as a drink.
19. Good and bad effects of wine on three classes of animals—on some counter-drink after the drink of wine—on the mixture of salt and treacle with wines—on the good effects of wine when churned with five kinds of salts, lac, etc.
20. Method of administering guggulu (Balsamodendron mukul Hooker) according to season, on the mixture of guggulu with oil.
21. Use of condensed milk—quality of the milk of cows and buffaloes.
22. War between Devas and Danavas, Siva's boon to the son of Ravana.
23. Detailed reasons for giving oil, ghee, etc.
24. Servants to look after the animals. How to know whether the animals has been sufficiently oiled, medicated and sweated?
25. 3 kinds of daily routine, two kinds of grasses as food, three kinds of eating three kinds of country.
26. Good and bad food.
27. Urine and feces of animals, as cow, buffalo, elephant, etc.
28. Origin of Lasuna (garlic, Allium sativum), on sweet and bitter tastes of the plant viz., root, seeds, etc.
29. Use of salts with medicines, such as, pippali (Piper longum, and Srangavera zingiber officinale, Rosa).
30. Animals under excitement.
31. Leeches, 12 varieties of leeches, 2 classes—poisonous and non-poisonous—their origin and characteristics.
32. Some complications.
33. Expiatory ceremonies.

II. *Asva Vaidyaka by Jayadatta Soori* :—

1. Introduction.
2. Description of different parts and their names.
3. On whorls of hair, good and bad marks, gait, nature etc.
4. Dentition.
5. The life period.
6. Breeds.
7. Mode of riding.
8. Treatment of sterility.
9. Signs of pregnancy; description of the development of the fœtus monthwar.
10. Care of animals before, during and after parturition; attention to infants.

APPENDIX ' B '—*contd.*

11. Posology.
12. List of drugs in use.
13. 6 rithus or seasons of the year and the seasonal care.
14. Watering of animals.
15. Venesection ; place of bleeding, time of bleeding and amount of blood to be let out etc.
16. Decoctions etc.
17. Medicated snuff.
18. Steam inhalation, vapour baths and sweating.
19. Application of oils etc.
20. Different kinds of oils etc.
21. Medicated ghee.
22. Attention to exhausted animals.
23. Signs of approaching death.
24. Bite by poisonous insects.
25. A kind of fever called ' Mriga Roga.'
26. Diseases caused by the affliction of wind.
27. Signs of affliction of the 3 doshas in the body ; time and causes of such affliction.
28. Diagnosis of disease.
29. Diseases of the face, their diagnosis and treatment.
30. Diseases of the eyes, their classification, general symptoms, names, and diagnosis and treatment.
31. Diseases of the head, classification, symptoms and treatment.
32. On lameness and its treatment.
33. Bronchial diseases and their treatment.
34. Hiccough and its treatment.
35. Wounds and their remedies.
36. Erysipelas and its treatment.
37. Treatment of sores within the nostrils and running from the nose (glanders).
38. Diseases of the foot, classification, names, symptoms and treatment.
39. Fevers, their classification, names, symptoms and treatment.
40. Indigestion and its treatment.
41. Diarrhœa and its treatment.
42. Colic.
43. Diseases due to constipation.
44. Diseases of chest.
45. Intestinal worms.
46. Strangury and retention of urine.
47. Leprosy and Leucoderma.
48. Oedema and inflammation.
49. Diseases of the scrotum.
50. Paraphymosis.
51. Diseases of the stomach.
52. Piles.
53. Rheumatism—(Tetanus ?).
54. Insanity.
55. Planetary affections.
56. Aenemia.

APPENDIX 'B'—*contd.*

57. Pneumonia.
58. Accidents.
59. Treatment of poisons.
60. Epilepsy.
61. Dropsy.
62. Signs and symptoms of curability or incurability of diseases.
63. Nature of the 3 doshas.
64. Garlic and its preparations.
65. Bolus administration.
66. Tonics.

*Aśva Chikitsāna by Nakula :—*

1. Introduction.
2. Breeds, classification, pedigree etc.
3. Description of colours.
4. Whorls, good and bad etc.
5. Dentition.
6. Description of the body and limbs with their proportion.
7. Different gaits.
8. Use of animals as beasts of burden.
9. Riding.
10. The 6 seasons of the year and their effects on animals.
11. Seasonal care.
12. Medicated snuff.
13. Administration of bolus.
14. Medicated ghee.
15. Preparations of decoctions.
16. Poisons and their treatment.
17. Signs and symptoms of approaching death.
18. Construction of sheds etc.

III. *Vrisha Kalpa Druma or Pasu Chikitsā*.—This book is in Hindi, compiled by Kesavasimha Taluqdarji. This is essentially a book on the treatment of cattle. It deals with the following subjects :—

1. Different breeds of cattle.
2. Description of the body and the several limbs.
3. Good and bad marks.
4. Different types of horses.
5. Different colours.
6. First aids in parturition.
7. Care of pregnant cows, care both before and after parturition in cows, care of calves.
8. Construction of cattle sheds etc.
9. Principles of grazing.
10. Purchase and sale of bulls and cows.
11. Feeding and watering of cows.
12. General confirmation of the body and the proportion of limbs.
13. Signs of health and diseases.
14. Diagnosis of diseases by observations, and examination of the features, ear, eyes, urine, dung, milk and the temperament etc.
15. Medicines for increasing milk.

APPENDIX 'B'—*contd.*

16. Medicines for digestion.
17. Treatment of wounds.
18. Medicines stimulating hair growth at the tuft of the tail.
19. Diseases of bowels and treatment.
20. Diseases of throat and chest and their treatment.
21. Treatment of debility.
22. Administration of enema.
23. Diarrhoea and treatment.
24. Food poisoning and treatment.
25. Jaundice and treatment.
26. Diseases of the udder.
27. Worms in cattle.
28. Turning round sickness.
29. Paralysis etc.
30. Different kinds of poisons.
31. Seasonal care of cows according to the 6 seasons of the year.
32. Different kinds of tonics and other drugs.
33. Many other topics.

IV. *Kari Kalpa Lata*.—Treatment of elephants in Hindi by Pandit Mangalacharan—Deals with the following :

1. Origin and different kinds.
2. Description.
3. Signs of pregnancy and development of the foetus.
4. Foetal life.
5. General feeding and watering.
6. Control of elephants, and other animals.
7. Nutrient foods.
8. Signs of diseases and their causes.
9. Different kinds of fevers, curability or incurability thereof and treatment.
10. Sand-eating among elephants.
11. Different kind of diseases, their description and treatment.
12. Medicines for worms, colic, indigestion, constipation, diarrhoea and dysentery rheumatism, diseases of eyes, foot, kidney, stomach, convulsions, and fits etc.
13. Wounds and their treatment.
14. Many specific preparations for specific diseases.

V. *Mattuvagadam or Treatment of Cattle*.—Part I—By Ponnuswamy Thevar and Muthukarnappa Pillai. This is a treatise in Tamil on the treatment of cattle and consists of 2 parts—deals with the following subjects :—

1. Keeping and care of cows.
2. General hygiene—feeding and watering.
3. Different kinds of foods.
4. Signs and causes of diseases.
5. Different kinds of medicines and their preparations etc. Many compound stock preparations are described.
6. Various kinds of diseases, their symptoms and treatment are given in detail—about 92 different diseases are described along with their treatment.



APPENDIX 'B'—*contd.*

Part II.—By Nelliapendra Pillai in Tamil. Deals with the different kinds of tonics and many compound preparations for the daily and periodical administration of cattle. Gives details of several external applications, medicated fomentations, inhalations, drenches and electuaries etc. About 90 different kinds of ailments of cattle are described with detailed treatment.

VI. *Leela Prakasa*.—A treatise on veterinary science—Paper manuscript—Written by one Raghavan Nambiar—Available in the Government Oriental Manuscript library, Travancore.

VII. *Gaja Raksha Tantram*.—An elaborate treatise on veterinary science by one Sankaram Nambiar—In Malayalam.

VIII. *Asva Sastram*.—By Ponnuswamy Thevar and Muthukarnppa Pillai—In Tamil—A treatise on animals—deals with several ailments of animals and their treatment. In this many interesting preparations of indigenous drugs, are given such as several tonics electuaries, mud and vapour baths, medicated oils, ghee and wines and preparations for treatment of wounds, canker, and skin diseases etc.

## OTHER MODERN MISCELLANEOUS PUBLICATIONS ON THE TREATMENT OF CATTLE.

The treatment of cattle—Telugu—Author—Yajalla Sri Ramulu Chowdhuri, Angalur, Kishna District. The following is the list of books :—

1. Anuvaba Pashu Vaidya Chintamani.
2. Jantu Vaidyam.
3. Andhra Jatiya Pashu Vaidya.
4. Pashu Graha Sarumu.
5. Prachin Pashu Sam-rakshna.
6. Drabya Jnanamu.
7. Padi Panisrama.
8. Pashu Jatulu.
9. Pashu Chikitsasaramu.
10. Pashu Netra Chikitsa.
11. Veshoja Kalpama.
12. Sastra Vijumu.
13. Wats Vrittamu.
14. Swasta, Vrittamu.
15. Pashu Pariksha.
16. Pashu Roga Vyjnanamu.
17. Visha Tantram.
18. Unto Vyathulu.
19. Pasy Vaidya Vastu Gunadipika.
20. Go-sam-rakshna Sastram—Tamil—By Sri Gopala Iyer.
21. Kaliparipalana Chikitsa Deepam—Tamil.
22. Anubhoga Mattu Vaidyam—3 parts—Tamil.
23. A Manual of Indian Materia Medica—by Ramchandra Mudaliar—English.
24. Book on Indigenous Drugs—English—by Dasan.—Author not known.
25. Some Diseases of Cattle in India—English (Government Press, Bengal)—Author not known.
26. Habeebul Hyvanath—by Hakeem Bhogalram—Urdu—A veterinary treatise.

## APPENDIX 'C'.

The places in India which were not visited by me but where literature on Ancient Indigenous Veterinary Medicine is reported to be available :—

1. SREE RAGHUNATH TEMPLE LIBRARY OF THE H. H. THE MAHARAJA OF JAMMU AND KASHMERE.

- (1) *Salihotra*.—Book on veterinary science—Language and script Sanskrit—9 volumes.
- (2) *Asvayurvedasarasangraha*.—A veterinary treatise—In Sanskrit—Author Vahada son of Sri Vikrama—325 sheets—9133 lines—Complete.
- (3) *Vaji Rahasya Satakam*.—The hundred secret points of animals—Language Sanskrit—Author Geervana Yuddha Vikrama son of Rana Bahadur—12 sheets.
- (4) *Salihotronnaya*.—Treatise on veterinary science—Author's name not mentioned—448 lines—Parts I, II, III & V—Complete—Two copies of this are available.

There is reason to presume that this may probably be the original veterinary treatise by Salihotra which is not available anywhere so far. Some portions in the beginning are only available in Tanjore Library.

- (5) *Sarasangraha*.—Treatise on veterinary science—by Gana—166 sheets—Language Sanskrit—Complete.
- (6) *Harthyayurveda (elephantology)* by Palakapya—324 pages—4 parts—Complete.
- (7) *Turanga Siddhi*.—A veterinary treatise—Language Sanskrit—Author Viswanatha Vajpeyi.
2. Royal Asiatic Society Library—Calcutta.
3. The Imperial Library—Calcutta.

The above two libraries, probably contain several original works on veterinary science.

The following are the other places where uncatalogued manuscripts are preserved and where information on indigenous veterinary medicine is reported to be available :—

4. *Nepal*.—Katmandu.
5. *Poona*.—Bhandarkar Oriental Institute.
6. *Bikaner*.—State library.
7. *Baroda*.—The Oriental Institute or the Central library.
8. *Benares*.—The Saraswathi Bhavan library the Sanskrit College, Benares.
9. *Allahabad*.—The municipal museum.
10. *Lucknow*.—The Royal library.
11. *Calcutta* :—
  - (a) The Sanskrit Sahitya Parishad.
  - (b) The Bangyeya Sahitya Parishad.
12. *Dacca*.—The University library.
13. *Assam*.—The Kamarupa Anusandhana Samiti.
14. *Ujjain*.—The Prachya Grantha Sangraha.
15. *Gwalior*.—The State library.
16. *Orissa*.—Library of the Rulling Chief of Bamra State.
17. *Orissa*.—Library of the Ruling Chief of Kalahandi State.
18. *Orissa*.—Library of the Ruling Chief of Mayurbhanj State.
19. *Patna State*.—Library of the Rulling Chief of the State.
20. *Lahore*.—The Punjab University library.
21. *Madras Province*.—The Raja's library, Vizianagaram.
22. *Orissa*.—The Raja's library, Kalikote.
23. *Jaipur*.—The State library.
24. *Ahwar*.—The State library.
25. *Guzerat and Kathiawar States*.—It is reported that a large number of uncatalogued manuscripts are available.
26. *Gondal*.—Rasa Sala Oushadhalaya—There is a big library of over 5,000 manuscripts and veterinary manuscripts are reported to be available.

## APPENDIX 'D'.

*List of rural Veterinary Practitioners (of the indigenous System) who were interviewed at several places and the information collected from these.*

Name of the place or village.	Name of the Practitioner.	Whether any MSS. were with him.	Remarks.
<i>Travancore State.</i>			
1. Chewaracode . . .	Mr. V. Ponnla Nadar . . .	1 palm leaf MS. on cattle	Gave for reference and return.
2. Kundara . . .	Mr. Oommon Pannikar . . .	A Malayalam manual published by him.	Has given some useful information.
3. Ochira . . .	Mr. Elaya Kunju Vaidyan.	2 printed Tamil manuals on cattle and horses.	These manuals are already available in print.
4. Vlapuram . . .	Mr. Idikula Matham . . .	Nil . . . . .	Has given a list of drugs which he is using.
5. Chenganur . . .	Mr. K. Govinda Pillai . . .	3 palm leaf MSS. on horses and cattle.	Gave for reference and return.
<i>Madura District.</i>			
6. Thevaram . . .	Mr. Devudu Iyer . . .	1 palm leaf MS. on cattle	Unwilling to lend the MSS.
<i>Venkatagiri Town (Nellore District).</i>			
7. Venkatagiri Town .	Sheik Dastagiri Shahib .	6 paper MSS. on horses .	Gave some useful information.
8. Do. . .	Sheik Lal Ahmad Shahib .	} Had some valuable MSS. on horses and elephants.	Unwilling to give, but promised to supply a copy thereof if desired.
9. Do. . .	Sheik Ali Shahib . . .		
<i>Bezwada.</i>			
10. Angalur . . .	Mr. Y. Sree Ramalu Chowdhiri.	About a dozen Telugu veterinary manuals which he has published.	Gave a complete set.
<i>Orissa Province.</i>			
11. Cuttack . . .	Sree Shyam Sundar Kabithirta.	Nil . . . . .	Has given some useful list of drugs.
12. Berhampur . . .	Mr. Sapo Simhadri of Bijapur.	Nil.	
13. Do. . .	Mr. Jogiah Gauda . . .	Nil.	
14. Do. . .	Mr. Jagannath Gauda . . .	Nil.	
15. Do. . .	Mr. Jangamian . . .	Nil . . . . .	Has given some useful information.
16. Chatrapur . . .	Mr. Rama Gauda (Boirani).	Some palm leaf MSS. on cattle.	Unwilling to give the MSS. for reference and return.
17. Do. . .	Mr. Bhima Gauda . . .	One paper MS. on cattle	Do.
18. Do. . .	Mr. Damluru Mahakida . . .	Nil . . . . .	Has given some useful information.
19. Aska . . .	Mr. Kholia Gauda . . .	Nil. . . . .	Do.
20. Do. . .	Mr. Kolbolo Gauda . . .	Nil.	
21. Do. . .	Mr. Khogo Sahu alias Kholi Sahu.	Nil.	
22. Do. . .	Mr. Bhima Gauda . . .	Nil. . . . .	Has given some useful information.

APPENDIX 'D'—*contd.*

Name of the place or village.	Name of the Practitioner.	Whether any MSS. were with him.	Remarks.
23. Aska . . .	Mr. Bhortho Sahu .	<i>Nil</i> . . . . .	Gave some very useful information.
24. Do. . . .	Mohammad Fazlul Khan Sahib.	<i>Nil</i> . . . . .	Gave some information about the herbs used to cure snake bite.
25. Chatrapur . . .	Mr. Keshab Moharana .	<i>Nil</i> .	
26. Do. . . .	Mr. Bawu Swami .	<i>Nil</i> .	
27. Do. . . .	Mr. Nityananda Deo .	<i>Nil</i> .	
28. Do. . . .	Mr. Ucca Pradhan .	<i>Nil</i> .	
29. Do. . . .	Mr. Gouranga Pradhan .	One palm leaf MS. on cattle.	Refused to give for reference and return.
30. Angul . . . .	Mr. Gedi Marida .	<i>Nil</i> .	
31. Do. . . .	Mr. Kartica Bahera .	One Oriya printed manual on cattle.	
32. Do. . . .	Mr. Gundicha Bahera .	One palm leaf MS. on cattle.	Refused to give.
33. Do. . . .	Mr. Akulo . . . .	Some palm leaf MSS. on cattle.	Do.
34. Do. . . .	Mr. Nakori Rout . .	Do. . . . .	Do.
35. Do. . . .	Mr. Ananda Bahera .	Do. . . . .	Do.
36. Do. . . .	Mr. Dhukia Bhutia .	<i>Nil</i> .	
37. Sambalpur . . .	Mr. Kalya Nag . . .	A printed manual on cattle.	
38. Do. . . .	Mr. Gouranga Barik .	<i>Nil</i> .	
39. Do. . . .	Mr. Aetha Bargale .	<i>Nil</i> .	
40. Do. . . .	Mr. Dileswar Pande .	<i>Nil</i> .	
41. Do. . . .	Mr. Kamala Lochona Row.	<i>Nil</i> .	
42. Do. . . .	Mr. Lakmana Bahera .	1 palm leaf MS. on cattle.	Refused to give.
43. Do. . . .	Mr. Rushi Bahera .	<i>Nil</i> .	
44. Chansarapalu . .	Mr. Chowdhuri Janna .	} <i>Nil</i> . . . . .	Gave information about the herbs used to cure snake-bite.
45. Do. . . .	Mr. Magatha Swai .		

## APPENDIX 'E'.

Details of information on Indigenous Veterinary Medicine, received from the Provinces and States and collected in the course of tour :—

Name of Province.	Details of information.
1. Madras . . . .	(1) List of reference books. (2) Note by Mr. A. Krishnaswamy. (3) A letter from Mr. A. Krishnaswamy. (4) Translation of a Telugu book called Saha-deva Pasuvaityamu—40 pp.
2. Bombay . . . .	List of drugs and preparations received from the staff of the province—68 sheets.
3. Bengal . . . .	List of drugs—4 sheets.
4. Bihar . . . .	List of drugs—10 sheets.
5. United Province . . . .	List of drugs—4 sheets.
6. Punjab . . . .	Copy of Veterinary Bulletin No. 21 and translation of 2 MSS. from Bhopal.
7. Central Provinces . . . .	(1) Reference books. (2) List of drugs and in veterinary practice—1 sheet.
8. Assam . . . .	List of drugs—4 sheets.
9. North-western Frontier Province . . . .	List of drugs—2 sheets.
10. Sind . . . .	List of drugs—1 sheet.
11. Hyderabad . . . .	List of reference—1 sheet.
12. Mysore . . . .	List of drugs—3 sheets.
13. Orissa . . . .	List of drugs—134 sheets.
14. Travancore . . . .	List of drugs—38 sheets.
15. Indigenous Veterinary Institution, Angalur . . . .	List of drugs—122 sheets.

## APPENDIX ' F '.

## QUESTIONNAIRE.

1. Name of the Practitioner.
2. Father's name.
3. Whether his profession is hereditary or self-acquired.
4. Whether there are any standard professional veterinary books or list of standard prescriptions given to him by his fore-fathers or collected by him.
5. If self-acquired, the source from which he learnt his profession.
6. Whether he can produce the professional books or the list of standard prescriptions for perusal, and in cases of really useful ones, is he prepared to hand them over to the Government.
7. Has he specialised in the treatment of any disease or diseases ; if so, names of such diseases with particulars of treatment.
8. In cases of really successful treatment, would he be able to give the number of cases treated successfully and the number of cases not treated successfully.
9. Whether he can give any useful information regarding the treatment of diseases by means of herbs or medicinal plants ; if so, full description of such herbs or medicinal plants and details of their uses.
10. Whether he can give the names of such herbs or plants which are poisonous to animals and also their antidotes.
11. Any other information which he can give.
12. The names of the several stock-preparations that are in every day use with him with details of their prescriptions and uses.

## **APPENDIX IV**

**TO**

### **THE PROCEEDINGS OF THE 5TH MEETING OF THE CENTRAL ADVISORY BOARD OF EDUCATION IN INDIA HELD IN MAY, 1940**

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**Report of the Second Wardha Education  
Committee of the Central Advisory Board  
of Education, 1939, together with the  
decisions of the Board thereon**



**NEW DELHI: PRINTED BY THE MANAGER  
GOVERNMENT OF INDIA PRESS: 1940**

## PREFACE.

At their meeting held at Simla on May 6th and 7th, 1940, the Central Advisory Board of Education had before them the report of the Committee which they appointed in December 1938, to consider further issues arising in connection with the system of basic education such as its relation to other branches of education and the financial problems implicit in its adoption.

The decisions reached by the Board with regard to the various conclusions and recommendations contained in the Committee's report are set out below.

While, as will be seen, the Board were unable to accept the conclusions and recommendations in their entirety, they felt that the report, read in conjunction with the report of the previous Committee appointed by the Board to consider the Wardha Scheme, might well prove a valuable contribution towards the exploration of a most important problem.

The report is accordingly printed on pages 1—27 following and the main conclusions and recommendations referred to in the next paragraph will be found on pages 7—8.

The Central Advisory Board of Education adopted the conclusions and recommendations Nos. 1, 2, 3, 4, 5, 6 and 9. With regard to the others, *viz.*, Nos. 7 and 8, the Board arrived at the following decisions:—

No. 7.—The Board decided that to implement this recommendation it would be better to strengthen their existing Vernacular Education Committee than to set up a special Committee.

The Vernacular Education Committee was accordingly reconstituted as set out below: it has power to co-opt.

1. Rajkumari Amrit Kaur.
2. The Right Rev. G. D. Barne, C.I.E., O.B.E., V.D., Bishop of Lahore.
3. Mr. R. M. Statham, C.I.E., I.E.S., Director of Public Instruction, Madras.
4. Mr. W. H. F. Armstrong, I.E.S., Director of Public Instruction, Punjab.



5. Dr. Sir Zia-ud-Din Ahmad, C.I.E., Ph.D., D.Sc., M.L.A.
6. Pandit Amaranatha Jha, M.A., Vice-Chancellor, Allahabad University.
7. Mr. J. M. Bottomley, I.E.S., Director of Public Instruction, Bengal.
8. The Educational Commissioner with the Government of India.

*No. 8.*—While the majority of the members of the Board accepted the view of the Committee, the official members representing the Government of India expressed their inability to commit themselves in any way. The representative of the Legislative Assembly attending the meeting felt himself precluded under existing circumstances from supporting the Committee's recommendation. One or two members, while in favour of the principle that the Central Government should make some contribution, found themselves unable to go as far as the Committee desired.

The Board also decided that—

- (a) a copy of the Report, together with the decisions of the Board in regard thereto, should be forwarded to the Provincial Governments for consideration and such action as they might consider necessary;
- (b) their thanks be expressed to the Chairman and members of the Committee for the great amount of time and care which they had obviously devoted to the preparation of the Report.

For convenience and in order that the Board's attitude towards the system of 'basic' education as a whole may be made clear, the report of the Board's first Committee on the Wardha Scheme which was adopted by the Board without alteration in December 1938, is reprinted as an appendix.

## REPORT OF THE SECOND WARDHA EDUCATION COMMITTEE OF THE CENTRAL ADVISORY BOARD OF EDUCATION, 1939.

The Central Advisory Board of Education at its meeting held in January 1938 appointed a Committee under the chairmanship of the Hon'ble Mr. B. G. Kher, Premier and Education Minister, Government of Bombay, to examine the scheme of educational reconstruction incorporated in the Wardha Scheme in the light of the Wood-Abbott Report on General and Vocational Education and other relevant documents, and to make recommendations. This Committee submitted its report to the Board on the 3rd December 1938. During the consideration of this Report, which was generally adopted by the Board, certain issues emerged such as the co-ordination of the 'basic' system with higher education, the ways and means to finance it, etc., which in the opinion of the Board required further examination. With this object in view, the Board appointed another Committee consisting of the following members with powers to co-opt:—

The Hon'ble Mr. B. G. Kher, Premier and Education Minister,  
Government of Bombay, *Chairman*.

The Hon'ble Qazi Ataullah Khan, Minister of Education, Gov-  
ernment of the North-West Frontier Province.

Rajkumari Amrit Kaur.

Mrs. Hansa Mehta, Parliamentary Secretary for Education to  
the Hon'ble the Prime Minister, Bombay.

Dr. Zakir Husain, Principal, Jamia Millia Islamia, Delhi.

Pandit Amaranatha Jha. M.A., Vice-Chancellor, Allahabad Uni-  
versity.

Dr. W. A. Jenkins, D.Sc., I.E.S., Director of Public Instruction,  
Bengal.

Mr. W. H. F. Armstrong, I.E.S., Director of Public Instruction,  
Punjab.

The Educational Commissioner with the Government of India.

The Board also suggested that the Committee should, if possible, visit places where the 'basic education' scheme is in operation.

2. In accordance with the powers conferred on the Committee by the Board, the following were co-opted as additional members:—

The Hon'ble Mr. C. J. Varkey, Minister of Education, Govern-  
ment of Madras.

The Hon'ble Pir Illahi Baksh Nawaz Ali, Minister of Education,  
Government of Sind.

Mr. J. C. Powell Price, I.E.S., Director of Public Instruction,  
United Provinces.

3. The Committee as finally constituted held two meetings; the first in Simla on the 12th and 13th June, and the second at Poona on the 29th October 1939. Mr. Powell Price was unable to attend either meeting and the Hon'ble Mr. Varkey and Dr. Zakir Husain were unable to attend the second meeting. It proved impossible to arrange for the Committee as a whole to visit places where the "basic education" scheme is

in operation, but personal visits were paid by most of the members to some or all of these places.

4. The agenda and papers circulated therewith to the members of the Committee are set out in Appendix I.

A copy of the resolutions passed by the All-India Muslim Educational Conference and of notes on the agenda by the Hon'ble Pir Illahi Baksh, both of which were circulated to members of the Committee, will be found in Appendices II and III, respectively.

5. "*Pre-basic*" education.—The original Wardha Scheme advocated the free and compulsory education of all boys and girls between the ages of 7 and 14, though girls might be withdrawn after the completion of their 12th year if their guardians so desired. The Zakir Husain Committee recognised the importance of providing educational facilities for children below the age of 7 and envisaged the possibility of this being done on a voluntary basis with State help where possible, but did not feel justified in including it as a part of the compulsory scheme in view of financial and other considerations. The report of the first Kher Committee, as adopted by the Central Advisory Board of Education, contemplated the period of compulsory education as extending from the age of 6 to the age of 14 for all children.

The Committee fully recognise the importance in the child's educational life of the years 5—7. During this period the foundation of good habits, mental, moral and physical can be laid and the effects of childish ailments detected and remedied more easily and more effectively than at any later age. They understand that in many provinces at the present time children are admitted to the infants classes of primary schools at about the age of 5 and that parents are often glad to be able to leave their children during the day where they will not only be looked after but will also receive some useful training. They also appreciate the fact that where parents have acquired the habit of sending their children to school at an early age the difficulties of enforcing attendance when the compulsory stage is reached will be considerably reduced. They are accordingly anxious that facilities for education at the 'pre-basic' stage, so far from being reduced, should be widely extended by increasing the number of infants classes in State schools and by encouraging the establishment of efficient 'pre-basic' schools by voluntary agencies. They also suggest that Provincial Governments should set up a few model infants schools where the correlation of Kindergarten instruction with the curriculum of the 'basic' school may be studied and developed. The Committee do not, however, consider that it is practicable at the present stage to lower the minimum age of compulsory attendance below 6 years. To do so would add substantially to the serious financial problems already involved by the 'basic education' scheme and would also assume an adequate supply of properly trained women teachers, since children at this early age should be taught by women and not by men. Such a supply is practically non-existent in India at the present time. Steps should be taken to create it, either by adding special courses in infants teaching to existing training schools or by establishing special institutions for this purpose. The Committee were interested to learn that in certain provinces the possibility of utilising the services of widows in this connection was being explored and believe that this source of recruitment may be further enlarged. In the meantime, however, pending the solution of

the two major problems referred to above the Committee are of opinion that 'pre-basic' education, when provided by the State, should be free but not compulsory.

6. *'Basic' education and its division into two stages.*—A 'basic' school as at present conceived would appear to constitute a unit by itself for children between the ages of 7 and 14. The protagonists of the 'basic education' scheme are rightly insistent that the whole course should be regarded as coherent and consecutive. There is nothing, however, in this conception which conflicts with the view generally accepted by educationists to-day that the mental and physical changes which boys and girls undergo as a rule about the age of 11—12 should be recognised by corresponding adjustments both in the content of the curriculum and in the methods of instruction. Hence arises the need for treating the instruction given before and after this psychological break as forming two well-defined stages, each with its own scope, aims and technique though inspired by the same fundamental aim. It was for this reason that the Central Advisory Board of Education, when formulating a framework of educational organisation at its first meeting in 1935, recommended an organisation consisting of a primary stage, a lower secondary stage, and a higher secondary stage. There is, in fact, nothing novel so far as India is concerned, about the idea of a break at about the age of 11—12, as every province makes a distinction between primary and secondary or middle education, though the dividing line is at the end of the fourth class in some cases and at the end of the fifth in others. Nor is there anything in the general conception of the 'basic education' scheme which is repugnant to the notion that the onset of adolescence should receive recognition by a suitable differentiation in the scope and method of instruction. The principle of 'learning by doing' is equally applicable in the primary and in the post-primary school, only its practical interpretation needs adjustment to the growing powers and changing interests of the children. Moreover, if opportunities are to be provided for children to transfer from 'basic' schools to other forms of post-primary education and if as the Committee contemplate, the 'basic' school is to become the normal type of primary school not only in rural but also in urban areas, where the number desiring such transfers is likely to be much greater, a break in the organisation at about the age of 11—12 will become a matter of normal convenience as well as of educational desirability. It is obviously important that a child, if and when he transfers, should have completed a planned stage in his school career. Apart from those likely to be transferred to other forms of post-primary education—and they will be a comparatively small minority—there is an equally strong argument in the case of the remainder for a break between the primary and post-primary stages. The organisation of practical activities and their correlation with other subjects will be more effective and less expensive at the post-primary stage, from the point of view both of grading pupils according to their intelligence and of economising staff, accommodation and equipment, wherever it is possible to provide a central school to serve a number of contributory primary schools. This will be possible as a rule in towns and in those rural areas where villages are fairly large and close together. Finally, boys and girls, who under satisfactory arrangements may be educated together during the primary stage, will have to be taught separately subsequently. Provision for their post-primary education will be much facilitated if they can be collected in sufficient numbers into 'basic' post-primary central schools.

After serious consideration of this most important problem the Committee reached the conclusion that the divergence between those who regard the 'basic' course as one and indivisible and those who realise the need for a break between about the age of 11—12 is more apparent than real. For those children—and they will be the great majority—who remain to the end of their school career under the 'basic' system, there will be no break in the continuity or aim of the instruction, and such a break as there may be will be only a transference from one 'basic' school to another. For those who pass to other forms of post-primary instruction, the effects of the change will be minimised if the curriculum of the institutions in question is closely related, as the Committee recommend, to that of the 'basic' school. The Committee accordingly are agreed that 'basic' education should comprise a correlated course of eight years from the age of 6 to the age of 14, which for the sake of convenience should be divided into two stages—the first stage covering a period of 5 years and the second stage 3 years. The first stage should be called "junior" and the second stage "senior". Moreover, the curriculum for all schools beyond the 'junior basic' stage, whether 'senior basic' or other forms of post-primary education, should develop logically from that of the 'junior basic' school.

7. *Transfer of children from 'basic' schools to other schools.*—The Committee contemplate that the 'basic' school will be the normal type of school attended by all children up to the end of the 'junior' stage. They realise, however, that after that stage certain children, and particularly those who may be intended for a university career, will transfer to schools of a different type from the 'senior basic' school. The Committee feel that arrangements should be made for such transfers in the case of children who have completed the fifth grade in 'basic' schools and shown the necessary aptitude for benefiting by a course of higher education. Without desiring to prescribe in any detail the nature of such a course, the Committee lay emphasis on the fact that the curriculum should derive naturally from that of the 'junior basic' school, but should vary in its later stages to meet both the differing aptitudes of the pupils and the requirements of the occupations they intend to enter on leaving school. These variant forms of higher education should extend over a minimum period of 5 years, with a further course of more advanced work for those who intend to proceed to a university or enter occupations for which a more prolonged course of study is regarded as essential. It may be convenient for such diversified courses to be given in separate institutions and the possibility of developing Technical High Schools in or in connection with existing Technical Colleges, as forms of higher education alternative to that provided by the normal high school, should receive careful consideration. It is particularly important that subject to the over-riding right of the parent to make the final decision, the school to which a child should go at the conclusion of the 'junior basic' stage should be determined primarily by the special aptitudes he has displayed during this stage. In any area where compulsory education up to 14 is in force, a child will remain under obligation to attend school to that age whatever the type of school he may be attending.

While those children whose general intelligence or future careers make it obvious that they cannot complete their education in a 'senior basic' school, should be transferred at the end of the fifth class wherever possible, provision must also be made for those children who wish to

continue their education after completing the course at the 'senior basic' school. Special arrangements must be made so that such children may receive special tuition in those subjects, *e.g.*, English which do not form part of the curriculum of the 'senior basic' school.

As regards the relation of the post primary schools other than the 'senior basic' with university courses, the Committee did not consider it desirable to go into details, as it is for the universities to prescribe their own courses. They feel, however, that it is by no means impossible for the responsible educational authorities to relate the instruction provided in such schools to that of the 'junior basic' school at one end and of the university at the other.

8. *Parallel courses of instruction for girls in the upper classes of 'basic' schools.*—The Wardha Scheme, while allowing girls to be withdrawn from 'basic' schools after the completion of their 12th year if their guardians so desire, clearly did not contemplate that the education of all girls would cease at this stage. The Central Advisory Board of Education assume that compulsion up to the age of 14, if and when introduced, will apply to girls as well as to boys. A suitably modified syllabus will therefore be necessary for those girls who continue their education in 'senior basic' schools. The Committee accordingly recommend that courses should be framed specially suited to the aptitudes and requirements of older girls and should include such subjects as cookery, laundrywork, needlework, homecrafts, the care of children, first aid, etc., the rest of the instruction being correlated with these practical activities in accordance with the general principles of the 'basic education' scheme.

9. *Appointment of a standing committee to watch educational developments.*—Provinces are now embarking on new educational experiments and the system of 'basic education', which many of them are introducing, is still in the experimental stage. It will be advantageous if the results of all these experiments are watched and co-ordinated by some central body. The Committee, therefore, recommend that a standing committee of the Central Advisory Board of Education be appointed to survey the general progress of educational developments in all the provinces, with special reference to 'basic' education, and to make recommendations to the Board for necessary action from time to time. This standing committee should contain a representative of the Hindustani Talimi Sangh.

10. *Central Bureau of Information.*—The syllabus outlined in the Zakir Husain Report is admittedly tentative and is likely to require adjustment in the light of local conditions. The interpretation of the syllabus in this connexion, the extent to which a particular topic or craft is to be introduced and the nature of the incidental information to be given to children at any given age are problems which require to be carefully handled. The Committee considered whether any organisation such as a central bureau, through or by which these and similar problems can be elucidated, should be set up, but came to the conclusion that as this was essentially a matter for local decision it was not necessary to create a central bureau at this stage.

11. *Ways and means to finance 'basic' education.*—The framers of the original Wardha Scheme hoped that while such education during the earlier stages might not be productive yet for the whole period of seven years it would be self-supporting. The Wardha Conference which met in 1937 to consider this scheme was not convinced that

it could or should be made self-supporting although it considered that it would gradually be able to cover the remuneration of teachers. The Zakir Husain Committee also doubted whether such education could be made entirely self-supporting and while expressing the opinion that 'basic' education should cover the major portion of its running expenses, stated that all other educational expenditure, *e.g.*, on buildings, equipment, etc., must be met from other sources, public and private. The Committee of the Central Advisory Board of Education appointed in 1938 to consider this scheme also pointed out that 'activity' schools would cost more to run in the beginning than the present type of school. It may now be accepted that no school, 'basic' or otherwise, which devotes itself to its proper function is likely to be an entirely self-supporting unit. This, however, is no reason why the marketable articles it produces should not be sold as advantageously as possible. After this and other possible sources of income have been fully explored, the balance of the cost of providing a compulsory system of education, which must be free, will have to be met from public funds.

The provision of such education as is necessary for its own stability and the well-being of its citizens is a fundamental responsibility of the democratic State—a responsibility which should be divided equitably among those authorities which are concerned with educational administration. In countries like England, about 50 per cent of educational expenditure comes from the Central Government and the rest is found from local sources. In India, the authorities concerned are the Central Government, the Provincial Governments and the local bodies entrusted with educational powers. Each of these authorities must contribute their share of the net cost of education, *i.e.*, the total cost after receipts from fees, voluntary contributions and the sale of articles made in school have been deducted. Apart from this general consideration the Committee are satisfied from figures submitted to them that the cost of introducing a free and compulsory system of 'basic' education between the ages of 6 and 14 is beyond the existing financial capacity of any provincial Government or local body, a minimum estimate of the net cost being Rs. 2 per head of population per annum. As they are convinced that the future of India must depend very largely on such a system being introduced without delay, the Committee have no alternative but to recommend that the Central Government should contribute not less than half the approved net expenditure of a Provincial Government on this particular service. Such a contribution would naturally be contingent on the Provincial Government (a) raising the remaining sum required from its own resources (b) undertaking to pay an agreed minimum scale of salaries to its teachers and (c) satisfying the Central Government that the amount is spent on free and compulsory education. The Committee further suggest that in order to lighten the immediate burden of the non-recurring expenditure required to bring the scheme into operation the cost of all sites, buildings, equipment, etc., exceeding Rs. 5,000 for any single item should be met from loan.

12. *Disposal of the produce of schools.*—The 'basic education' scheme centres round a productive basic craft. Means will have to be devised for the disposal of the marketable articles thereby produced. An economical method of marketing is essential, and as this is beyond the scope of any individual school, it will only be possible if a central agency in each province undertakes this work. The Committee do not mean by

this that there should be only one central depot in each province for collecting and selling articles produced at school but that the Provincial Government in each case should undertake direct responsibility for this organisation.

13. *Resolutions of the All-India Muslim Educational Conference.*—The Committee also gave careful consideration to the resolutions submitted on behalf of the All-India Muslim Educational Conference and were gratified to find that on all major educational issues there was a substantial measure of agreement between the decisions of the Conference and their own conclusions.

14. *Main conclusions.*—The following is a summary of the Committee's main conclusions:—

- (1) That while the provision of 'pre-basic' education in Nursery and Infants schools and classes is highly desirable, it is not practicable at this stage, in view of the lack both of money and of trained women teachers, to advocate its introduction on a compulsory basis. Provincial Governments should aim in the first place (a) at providing model Infants and Nursery Schools in suitable centres, (b) at increasing the supply of properly trained infants teachers, who should be women, (c) at encouraging the enrolment in 'basic' schools of children below the minimum age for compulsory attendance and (d) at stimulating the provision by voluntary agencies of efficient 'pre-basic' schools.
- (2) That 'basic' education should comprise a course of eight years from the age of 6 to 14 years and that this course while preserving its essential unity should consist of two stages—the first stage, the 'junior' stage, covering a period of 5 years and the second stage, the 'senior', 3 years.
- (3) That the transfer of children from the 'basic' school to other form of post-primary education should be allowed after the 5th grade, i.e., at the conclusion of the 'junior basic' stage.
- (4) That the various types of post primary school (other than the 'senior basic' school) to which suitable children may be transferred at the end of the 'junior basic' stage should provide a variety of courses extending over a period of at least five years after the age of 11. These courses, while preserving an essentially cultural character, should be designed to prepare pupils for entry to Industrial and Commercial occupations as well as to Universities.
- (5) That special arrangements should be made in these schools for assimilating pupils who decide to continue their education after completing the full course in the 'basic' school, i.e., after reaching the 8th class.
- (6) That suitable courses should be framed for girls attending 'senior basic' schools, which should include such subjects as cookery, laundry work, needle work, homecrafts, the care of children and first aid, the remainder of the instruction to be correlated with this course of domestic science in accordance with the general principles of the 'basic education' scheme.
- (7) That a standing committee of the Central Advisory Board of Education should be appointed to watch new educational



experiments carried on in the provinces as well as the progress of educational developments generally, with special reference to 'basic' education, and to make recommendations to the Board for necessary action. There should be a representative of the Hindustani Talimi Sangh on this Committee.

- (8) That subject to such conditions as are set out in the report the Central Government should contribute not less than half the amount of the approved net recurring expenditure on 'basic' education in each province, the balance to be found by the Provincial Government and the local bodies entrusted by it with the administration of compulsory education. For capital expenditure on buildings, equipment, etc., a loan system should be adopted.
- (9) That a central agency should be established in each province for the disposal of marketable articles produced in schools.

B. G. KHER (*Chairman*).

Q. ATAULLAH.

AMRIT KAUR.

HANSA MEHTA.

ZAKIR HUSAIN.

AMARANATHA JHA.

W. A. JENKINS.

W. H. F. ARMSTRONG.

JOHN SARGENT.

J. C. POWELL-PRICE.

PIR ILLAHI BAKSH.

C. J. VARKEY.

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#### NOTE OF DISSENT BY MR. J. C. POWELL-PRICE.

While agreeing with the main conclusions of the Committee, I am unable to subscribe to the theory that Pre-Basic Education should not be the concern of Government. In India there is only one agency which can be entrusted with elementary education and that is Government. The Infants class is an integral part of primary education and should in no case be separated. The nursery school is a totally different proposition and it only leads to confusion to class Infant and Nursery classes together. I cannot, therefore, agree with conclusion No. 1.

## APPENDIX I.

## (1) AGENDA.

1. To consider whether compulsion should be introduced from the age of 6 to 11 years in the first stage or from the age of 7 to 14 without any preliminary stage: in this connexion to consider whether in the event of the principle of compulsion applying up to the upper age limit of 14 years and a pupil of a "basic" school being transferred to another type of school at the age of 11, this pupil should be subject to compulsory attendance at that school until he attains the age of 14.

2. To consider what entire educational system should be aimed at in a province, what should be the aims, not inconsistent with the above general aim, for complete "basic" education for children aged from 7 to 14 years, or separately from 6 to 11 and 12 to 14 years and how far these should be complete in themselves and how far only a step towards the higher stages.

3. To consider the question of the co-ordination of the Wardha Scheme with higher education.

4. To consider the desirability of the division of the "basic" school into primary and upper primary schools or stages and the examination of the curriculum in the light of this possible division.

5. To consider the question of the transfer of children from the "basic" school at the age of 11 plus to other schools.

6. To consider what type of schools for higher education should be set up for those pupils who leave the "basic" schools at the end of five years (age 11+) and what should be the conditions, if any, for the admission of such pupils to these schools, and what should be the difference in the curriculum of these two types of schools.

7. To consider what type of secondary (lower and higher) schools should be established to serve the needs of pupils who may join them after completing the full term of "basic" education.

8. To consider what should be the duration and the educational content of these "post-basic" schools.

9. To consider what vocational specialisation may be suitably provided in these schools on the basis of regional and occupational characteristics of their location.

10. To consider the desirability of providing for parallel courses of instruction for girls in the upper classes of "basic" schools.

11. To consider what relation the "post basic" schools should have with the university courses.

12. To consider the question of the provision of "pre-basic" education. schools and the syllabus for the same.

13. To consider the question of the training of nursery school teachers and the recruitment of more women teachers generally.

14. To consider the question of ways and means to finance the Wardha Scheme.

15. To consider whether it is desirable or practicable for the State to finance "post-basic" and college education.

16. To consider the desirability of establishing a Board to co-ordinate the work of "basic" education undertaken as an experiment or otherwise in various provinces of the country.

17. To consider the desirability of starting a central bureau to supply uniform literature on the topics included in the curriculum of "basic" schools.

18. To consider the question of the disposal of the produce of children's activities.

(2) NOTE ON THE ACTION TAKEN, OR PROPOSED TO BE TAKEN, BY THE PROVINCIAL GOVERNMENTS ON THE WARDHA EDUCATION SCHEME.

While considering the Report of its Committee on the Wardha Education Scheme at its last annual meeting held in December 1938, the Central Advisory Board of Education felt that certain points such as the co-ordination of this scheme with higher education, the ways and means to finance it, etc., required further consideration and appointed another Committee to examine these and any other matters arising out of the Wardha Scheme. It also suggested that the Committee, if possible, should visit places where this scheme is already in operation. The provincial authorities were requested to supply information as to any schemes or other material which might be useful to the Committee in considering the questions referred to them and to suggest schools within their jurisdiction, if any, where the Wardha Scheme had been in operation for a sufficiently long time to justify a visit by the Committee. The information received from them is as follows:—

*Madras.*—There is no recognised school in this province in which the Wardha Scheme has been in operation.

*Bombay.*—The Government of Bombay have sanctioned a scheme to open about 100 "basic" schools from June 1939,—60 in four compact areas and 40 in isolated places. There is, however, one school at Thamma in the Kaira district which has been working on the lines of the Wardha Scheme for some 8 months. This school is working under the supervision of one Mr. Narharibhai Parikh of the Sabarmati Ashram, Ahmedabad.

The Government of Bombay have further expressed the following views as regards certain matters connected with the Wardha Scheme:—

(a) In this province there are infants classes in all primary schools where children are sent at the age of 5 or even 4. So long as these classes are maintained, it will not be possible to refuse admission to such children. In rural areas people regard such classes as a kind of creche and under present circumstances, it is desirable to provide some useful occupation for children of this age.

(b) The general trend seems to be in favour of co-education in "basic" schools up to the age of 11 *plus*, girls to be allowed to drop out at about 12 years of age. This does not mean that all girls will drop out and a suitably modified optional syllabus will be necessary for those girls who continue their education in "basic" schools after this stage.

(c) The Wardha Educational Committee of the Central Advisory Board of Education has suggested various forms of activity

serving as a preparation for, and developing into, a productive basic craft in higher classes. Suggestions are invited with regard to the disposal of the marketable articles thereby produced.

- (d) The syllabus outlined in the Zakir Husain report is admittedly tentative and is likely to require adjustment in the light of local conditions. The interpretation of the syllabus in this connection, the extent to which a particular topic or craft is to be introduced and the nature of the incidental information to be given to children at any given age are problems which require to be carefully handled and some organisation such as a central bureau through or by which these and similar problems can be cleared up will be a great advantage. A Board to co-ordinate the work of basic education, undertaken as an experiment or otherwise, is also desirable in the various provinces.

*Bengal.*—This province has not as yet started any schools on the Wardha Scheme nor does it contemplate doing so in the near future.

*United Provinces.*—A committee appointed by the Provincial Government has submitted an interim report recommending the adoption of the Wardha Scheme with certain modifications. A Basic Training College for Men was accordingly started in August 1938 at Allahabad where graduates are being trained in the "basic" system of education. An experimental "basic" school consisting of classes I and II, where the actual system is being worked out, has been attached to the College. A Basic Training College for Women was also started in September 1938 and has been placed under the charge of the Principal of the Basic Training College for Men.

In January, 1939, two teachers from each district board were sent to the Basic Training College to undergo a three months' refresher course in the 'basic' system of education. These courses have now been finished and the Government have started refresher courses from the 1st May for about three months at the headquarters of the seven Inspectorial districts in the province where primary school teachers from district and municipal boards are undergoing training in the methods of "basic" education. It is proposed to have 250 teachers trained at each centre on these lines by graduates turned out from the Basic Training College under the guidance of a member of the staff of the Basic Training College. These teachers will finish their training by the 15th of July and will be sent back to their districts to open at least 30 schools in each district board and at least 5 schools in each municipal board. These schools will be called "basic" schools.

From August 1, another refresher course will be started in the same way for three months and the teachers who attend the course will be required to open another 35 schools. A further course on similar lines will commence in November. In February another course will be run to open class II in some of the above "basic" schools from July 1940. The teachers in their refresher courses will be trained in the principles of "basic" education, general science, civics, handwork including card board work, bookcrafts, spinning and gardening.

*Punjab.*—There are no "basic" schools in this province. A scheme has, however, been drawn up embodying certain features of the Wardha Scheme.

*Bihar.*—The Patna Training School has turned out one emergency batch of Wardha Scheme teachers; it begins with a second batch in June. The first emergency batch of teachers started work in schools at Brindaban, near Bettiah, North Bihar, in April 1939. There are 35 "basic" schools in the area.

The Director of Public Instruction, Bihar, has further expressed the following views as regards certain matters connected with the Wardha Scheme:—

- (a) Compulsion should be introduced from seven to fourteen years without any preliminary stage.
- (b) Children may branch off to other schools at the age of 12, or after completing the fifth grade of the "basic" school.
- (c) A sub-committee has been appointed to work out the cost of the Wardha Scheme. It has not yet submitted its report.
- (d) No special training for nursery school teachers is envisaged so far. With the general impetus given to girls' education, a steady supply of women teachers may be anticipated.

*Central Provinces.*—With the object of implementing the Provincial Government's resolution accepting the syllabus prepared by the Zakir Husain Committee (*viz.*, the 'official' Wardha syllabus), it is proposed to introduce the syllabus in primary schools in a compact area in the Wardha district in the first instance and in the light of experience gained to extend the working of the syllabus to primary schools throughout the province. As regards the training of teachers it is considered necessary that not only primary school teachers but also the staff of normal schools in the province should be trained in the Wardha syllabus. A programme with this object in view has accordingly been drawn up and will be in operation at the Vidya Mandir Training School, Wardha, from the 15th April 1939 to the 30th April 1940. This Training School has already primary classes both in Hindi and Marathi, which with some extension on the Hindi side, can serve as practising classes for the Wardha District Council teachers (under training) while the Wardha District Council teachers themselves will constitute practising classes for the Government secondary and normal school teachers under training. As these teachers will be drafted for training in batches and as the courses will be concentrated in short terms of about 5 months each, the existing Vidya Mandir Training School and Practising School staff will need to be strengthened. It will also be necessary to provide additional staff of a sufficiently high calibre and academic status for the retraining of Government normal school staff. In order to release the Government normal school staff for this training, it is proposed to suspend formation of the 1st year classes in Government normal schools throughout the province for 1939-40 only. The resultant saving in stipends, contingencies, etc., in Government normal schools will counterbalance the expenditure involved in the proposed scheme of the Wardha syllabus training at the Vidya Mandir Training Institute.

There are at present 44 schools maintained by the District Council in the Wardha District of the province where the Wardha Scheme has been in operation since the 1st of January 1939.

*Assam.*—As an experimental measure the provincial Government have provided in the current year's budget a sum of Rs. 1,000 to encourage the study of Hindustani and also Rs. 1,200 for the training of teachers of

“basic” schools under the Wardha Scheme. It is proposed to appoint a committee, if necessary, to consider the whole question in due course.

*North-West Frontier Province.*—The Provincial Government have not, so far, been able to introduce the Wardha Scheme in any school in this province. It is proposed to send four teachers during the current year to undergo training at the Jamia Millia, Delhi, and, on their return, to post them to two or three specially selected schools in order to give this new experiment a trial. Last year, a district inspector, a headmaster of a high school and two teachers of the Peshawar Training School for men were sent to Wardha for a fortnight to see the scheme in operation. All of them submitted reports on their return in which they advocated the introduction of the scheme. The Provincial Government, however, could not do so at the moment because of the lack of teachers trained in the new system and also because of certain other difficulties. It is, however, proposed to introduce the scheme in this province as early as possible.

*Sind.*—The Wardha Scheme has not so far been tried anywhere in this province. A committee of educational experts is shortly to be appointed by the Provincial Government to consider all educational schemes including the Wardha Scheme, and to evolve a scheme which will suit Sind conditions. As regards the financing of the Wardha Scheme, it is stated that this scheme even on the basis of a seven-year duration (ages 7 to 14) and not an eight-year duration (ages 6 to 14) as recommended by the Committee appointed by the Central Advisory Board of Education will make the Government of Sind responsible for the “basic” education of 4 lakhs of children in any normal year after the introduction of compulsion throughout the province. In view of the extra cost of an education based on an activity curriculum and of the large number of teachers of a new type and the three-year course of training which the Wardha Scheme contemplates, it is estimated that the cost of education per child under the Wardha Scheme will be not less than Rs. 25 annually. The annual cost under present condition is Rs. 23. With 4 lakhs of children between the ages of 7 and 14 in Sind, the annual total cost for “basic” education alone will be over one crore of rupees. This expenditure is beyond the present financial resources of the province. In view of this the education department of Sind will favour the evolution of its own scheme of education which, while achieving the necessary reorientation in the light of some of the basic principles of the Wardha Scheme, will keep the expense of the new undertaking within attainable limits. Till the contemplated provincial reorganisation committee has investigated this problem, it cannot be indicated with any degree of finality how the new scheme will be financed. But if vastly increased expense is called for, as is certain, the following measures (some or all) are suggested to finance it:—

- (a) Substantial annual grant from the Government of India, particularly to poor and backward provinces like Sind.
- (b) An education cess, an employment tax, or some other form of levy to be earmarked specially for education.
- (c) Donation of lands and buildings from charitable individuals and institutions on the lines of the Vidya Mandir Scheme.
- (d) Sale of articles of marketable value produced by pupils in the higher stages of “basic” education.

- (e) Introduction of compulsion up to the age of 11, and leaving the later stages of "basic" education to be worked on a voluntary basis by private agencies under a system of grants and Government inspection.
- (f) Reduction of expenses by means of cheaper designs of school buildings and equipment, by utilising, when possible, the community or religious houses as schools, by having part-time schools, etc.
- (g) Leaving higher education to private effort, the State spending only the minimum on organisation, inspection, etc.
- (h) Conscription of the educated youth of the province for a year or two in each case for service in the "basic" schools.

As regards the training of nursery school teachers and the recruitment of more women teachers generally, it is stated that in view of the consensus of opinion favouring the age-range of 7—14 for "basic" education, it will be necessary to start nursery schools in all the provinces. The education department of Sind considers that as much of the activity in these schools will be in the nature of play and educative entertainment, a simple course of training extending over a few months will meet the situation, and this should be supplemented by the issue of suitable literature for the teachers from time to time and by the occasional holding of refresher courses. Educated girls might be encouraged to start nursery schools in their own homes or in public gardens or in groves of trees, and so on. There is also another way in which recruitment of more women teachers would be made possible. The last two years of "basic" education for girls when they are between 12 and 14 years of age should be so arranged as to give them an idea of the methods and spirit of nursery schools and to leave them free by rotation to go and work in the nursery schools as part of their "basic" education. It is considered that under this arrangement a large number of women teachers for nursery schools will ultimately be found who will be already conversant with the spirit of "basic" education and likely therefore to prepare the children from the ages of 4 to 6 for eventful admission to "basic" schools.

*Orissa*.—"Basic" schools in this province will start work from the 1st January 1940. A training school for preparing teachers of these "basic" schools will start on the 1st June 1939.

2. As regards the question of visits of the Committee, the Director of Public Instruction, United Provinces, has stated that this year the schools will only have class I teaching under the new system and there will not, therefore, be much for the Committee to see in that province. He is of opinion that members of the Committee will obtain a better insight into the way the Wardha Scheme works if they visit the demonstration school in the Basic Training College at Allahabad at the end of July or in August. Methods of training, or rather "reconditioning", primary school teachers may also be seen at any of the centres in the Inspectorial districts which will also have a demonstration school attached. In their case, however, it will be merely a demonstration school as a practising school is impossible owing to the large numbers involved. The school at the Basic Training College, Allahabad, will however be a practising school.

The Director of Public Instruction, Central Provinces, has suggested that the Committee might visit some of the 44 schools maintained by

the District Council in the Wardha district where the Scheme has been functioning since the 1st January 1939.

The Director of Public Instruction, Bombay, suggests a visit to the school at Thamna in the Kaira District which has been working on the lines of the Wardha Scheme for about 8 months.

The Director of Public Instruction, Bihar, has suggested that the Patna Training School may be worth visiting and that the "basic" schools started at Brindaban may also be visited by the Committee.

3. Apart from the information supplied by the provinces, there is a training school attached to the Jamia Millia Islamia, Delhi, which provides for the training of teachers for "basic" schools.

(3) SUMMARY OF THE PROCEEDINGS OF THE FOURTH ANNUAL MEETING OF THE CENTRAL ADVISORY BOARD OF EDUCATION HELD IN NEW DELHI ON THE 3RD DECEMBER 1938, REGARDING THE WARDHA EDUCATION SCHEME.

In January 1938, the Central Advisory Board of Education appointed a Sub-Committee under the chairmanship of the Hon'ble Mr. B. G. Kher, Premier and Education Minister, Government of Bombay, to examine the scheme of educational reconstruction incorporated in the Wardha scheme, to consider this in the light of the Wood-Abbott Report on General and Vocational Education in India and other relevant documents and to make recommendations. The Sub-Committee submitted its report to the Board on the 3rd December 1938. Its main recommendations were—

- (a) The scheme of "basic" education should first be introduced in rural areas.
- (b) The age range for compulsion should be 6 to 14 years, but children can be admitted to the "basic" school at the age of 5.
- (c) Diversion of students from the "basic" school to other kinds of school should be allowed after the 5th class or about the age of 11 plus.
- (d) The medium of instruction should be the vernacular of the pupils.
- (e) A common language for India is desirable. This should be Hindustani with both the Urdu and Hindi scripts. Option should be given to children to choose the script and provision should be made for teaching them in that script. Every teacher should know both scripts, viz., Urdu and Hindi. Some members of the Committee suggest that the adoption of Roman script might prove a solution to the language difficulty and greatly minimise the work of both scholar and teacher.
- (f) The Wardha scheme of "basic" education is in full agreement with the recommendations made in the Wood-Abbott Report so far as the principle of learning by doing is concerned. This activity should be of many kinds in the lower classes and later should lead to a basic craft the produce from which should be saleable and the proceeds applied to the upkeep of the school.



- (g) Certain elements of cultural subjects which cannot be correlated with the basic craft, must be taught independently.
- (h) The training of teachers should be reorganised and their status raised.
- (i) No teacher should receive less than Rs. 20 per mensem.
- (j) Efforts should be made to recruit more women teachers and to persuade girls of good education to take up teaching.
- (k) "Basic" schools should be started only when suitable trained teachers are available.
- (l) The curriculum will need revision in the light of experience.
- (m) English should not be introduced as an optional subject in "basic" schools.
- (n) The State should provide facilities as at present for every community to give religious teaching, when so desired but not at the cost of the State.
- (o) No external examinations need be held. At the end of the "basic" school course a leaving certificate based on an internal examination should be given.
- (p) Pupils wishing to join other schools at the end of the 5th class (age 11+) should also be granted a leaving certificate.
- (q) Promotion from class to class will be determined by the school, though the results of the internal examinations should be subject to the supervisors' inspection.

2. The Board considered these recommendations at its meeting held on the 3rd December 1938. As regards the recommendation that the scheme of "basic" education should first be introduced in rural areas, the question was raised whether it would not be easier to control and watch this experimental scheme in municipalities rather than in the countryside. But as the real basis of the scheme was to attack illiteracy which existed to a much greater extent in rural than in urban areas and as the proposed curriculum was designed mainly for rural schools, the Board endorsed the recommendation of its Sub-Committee.

3. The Board next considered the recommendation that the age range for compulsion should be 6 to 14 years though children could be admitted to the "basic" school at the age of 5. It realised the difficulty of keeping children at school after they became really productive as their retention at school after the age of 11 up to 14 would impose a severe burden on those parents who belonged to the labouring classes and would expect their children to be earning at that age. It was suggested that in the present circumstances, compulsion should be started with the age limits of 6 to 11 in the first instance, the upper limit to be raised later to 12, 13 or 14. The general feeling however was that, however great the practical difficulties might be, the age range for compulsion from 6 to 14 years as recommended by the Sub-Committee should be regarded as the ultimate objective to be reached by stages.

4. The Board then took up the recommendation of the Sub-Committee that transfer of pupils from the "basic" school to other kinds of school should be allowed after the 5th class or about the age of 11 plus. As it was quite possible that certain children in these "basic" schools might

wish to attend a different type of school, for instance a school in which English was taught, the Board felt that this recommendation from the educational point of view was sound.

5. A suggestion was made that the mother tongue of the pupils, *i.e.*, the language which they normally spoke in their homes, should be the medium of instruction. It was felt however that such a course would lead to considerable practical difficulties on account of the presence of several dialects in the same area, and that if the mother tongue were used as the medium of instruction, a large number of text-books in various dialects would be necessary. Again, where one school might give instruction in one dialect and another in the same area in a different dialect, people would not be able to understand each other. The Board did not favour the suggestion of making the various local dialects of the pupils the media of instruction, and recommended that whatever the language used as the medium of instruction, it should be a literary language.

6. The Board then considered the recommendation relating to a common language for India which should be Hindustani. It was pointed out that the introduction of Hindustani as a compulsory subject in the provinces where Hindi and Urdu were generally spoken might be possible but that its introduction in those provinces where it was neither spoken nor understood would be difficult. Another difficulty, which was urged, was that several provinces had already a number of different languages spoken within their jurisdiction, and the introduction of an alien language (Hindustani) as a compulsory subject in those provinces would further add to their language difficulties. It was also stated that it would be difficult to obtain a sufficient number of teachers who could teach effectively in a language which was foreign to them. On the other hand, it was argued that if there were no common language like Hindustani, intercourse between the provinces would not be possible. Another suggestion was that there should be not only a common language for the whole of India but a common script also, *viz.*, Roman. The Board recognised the advantage of having a common language for the whole of India and the general feeling was that Hindustani should be this common language, and that in the provinces where it was not spoken, it should be introduced in schools as a second language. After a general discussion, the Board decided that when forwarding copies of the report of its Sub-Committee to the provincial Governments, these difficulties should be brought to their notice.

7. The Board observed that primary teachers were at present receiving very low pay in various provinces. It felt that a pay of less than Rs. 20 per mensem was likely to affect the success of the Wardha Scheme and wished to emphasise that no trained teacher should receive less than Rs. 20 a month as recommended by its Sub-Committee. In order to induce more women to take up teaching, it was suggested that higher salaries should be offered to women than to men. The Board, however, felt that the recommendation of the Sub-Committee as it stood was sufficient.

8. With regard to the recommendation of the Sub-Committee that English should not be introduced even as an optional subject in the "basic" schools, a fear was expressed that if English were not taught in these "basic" schools, other schools might follow suit so that a child who wished to learn English would not be able to do so. The Board,

however, considered that the demand for English would be met by the possibility of transfer after the 5th class or about the age of 11 plus to schools where English was taught as recommended by the Sub-Committee.

9. In the course of discussion on the recommendation of the Sub-Committee that no external examination need be held but that at the end of the "basic" school course a leaving certificate based on an internal examination should be given, it was pointed out that no system of internal examination would ever be satisfactory for the purpose of admission to other schools. But as it was open to the authorities of other schools, to which the pupils of the "basic" schools might seek admission, to prescribe any form of test they considered suitable, the Board approved the recommendation of the Sub-Committee.

10. The Board thus generally approved all the recommendations made in the Report of its Sub-Committee, and resolved that a copy of the Report, together with a summary of the discussion, should be forwarded to the provincial Governments for consideration and such action as they might consider necessary.

11. The Sub-Committee did not consider the question of financing the Wardha Scheme as this was outside its terms of reference, nor did it make any recommendation as regards the co-ordination of this scheme with higher education. To examine these questions of finance and co-ordination and certain other matters arising out of the Wardha Scheme, the Board appointed another Sub-Committee consisting of the following members. with powers to co-opt:—

1. The Hon'ble Mr. B. G. Kher, Premier and Education Minister, Government of Bombay, *Chairman*.
2. The Hon'ble Qazi Ataullah Khan, Minister of Education, Government of the North-West Frontier Province.
3. Rajkumari Amrit Kaur.
4. Mrs. Hansa Mehta, Parliamentary Secretary for Education to the Hon'ble the Prime Minister, Bombay.
5. Dr. Zakir Husain, Principal, Jamia Millia Islamia, Delhi.
6. Pandit Amaranatha Jha, M.A., Vice-Chancellor, Allahabad University.
7. Dr. W. A. Jenkins, I.E.S., Director of Public Instruction, Bengal.
8. Mr. W. H. F. Armstrong, I.E.S., Director of Public Instruction, Punjab.
9. The Educational Commissioner with the Government of India.

It was agreed that the Committee should, if possible, visit places where the Wardha Scheme is in operation.

(4) "Basic National Education" containing the Report of the Zakir Husain Committee and the detailed syllabus.

(5) Report of the Committee of the Central Advisory Board of Education appointed to consider the Wardha Education Scheme.

(6) Report of the Primary and Secondary Education Reorganisation Committee, United Provinces.

(7) Report of the Syllabus Committee, Central Provinces.

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## APPENDIX II.

RESOLUTIONS OF THE ALL-INDIA MUSLIM EDUCATIONAL CONFERENCE  
REGARDING WARDHA SCHEME.

## PART I.—(General).

(1) This conference is of opinion that Government should provide compulsory and free basic education throughout the country. This basic education should cover in the case of boys a minimum period of 8 years, i.e., from the age of 6 to 14 and in the case of girls a minimum period of 6 years, i.e., from the age of 6 to 12.

(2) The Conference is of opinion that the provision of educational facilities for the boys and girls should be separate but if for financial and administrative difficulties it is difficult to make provision for separate education, girls below nine may be educated in mixed schools but there should be separate schools for girls above nine years of age.

(3) The entire basic education should be imparted through the medium of the mother-tongue of students, namely, the medium of instruction for the Muslims of Northern India should be Urdu. In the Provinces where Hindustani language is not spoken, the Provincial language should be the medium of instruction; but every student may be taught Hindustani as Secondary Language. As regards the script, adequate arrangements should be made so that Muslims may learn this language in Urdu script. What is meant by 'Hindustani' language is the language generally spoken and understood by an average educated Muslim and Hindu of Northern India and Deccan.

(4) (a) In this scheme of basic education some suitable vocation or handicraft should be given central importance and the rest of the education should aim at the maximum possible adjustment of the economic and physical environment and the vocation of the child.

(b) In the matter of selection of a vocation this Conference is of opinion that the factors of educational possibilities and environment should be given careful consideration.

(c) In the selection of a basic vocation for girls, special consideration should be given to the fact that their needs and inclinations are different from the boys.

(5) In the Provinces the special educational facilities existing for the Muslims should continue and the foregoing principles of the new basic education should be introduced in the present schools where children of this age are educated but their religious and cultural characteristics should be maintained intact.

(6) Provision should be made for training a sufficient number of Muslim teachers for such schools as mentioned in the resolution No. 5. In this connection the Conference is of opinion that Government should establish a training class under the supervision of the Muslim University Training College which might train teachers for the new scheme.

(7) This conference is of opinion that it is necessary for the general educational machinery that Government should encourage private efforts in connection with the basic education.

(8) While legislating for the compulsory education, consideration should be given to the fact that if the parents can make any other satisfactory arrangements for the education of their girls, such girls may be exempted from attending Government basic schools.

(9) As regards the Advisory Committees or Boards which will be set up in connection with the introduction of basic education, it should be given consideration that the representation of Muslims on the Provincial Committees should be at least that much which they enjoy in the Legislative body of the province; and in the districts that proportionate representation which is fixed for them in the Municipal and District Boards.

(10) Since the introduction of universal compulsory education, the present non-Government institutions which are catering for religious instruction will not be able to discharge their functions effectively; and because without religious instruction, the entire education, according to the Muslims, would be defective and incomplete, in the opinion of this conference it is very essential that arrangements should be made for the compulsory religious education during the school hours for the Muslim students in all the basic schools.

(11) In this connection this committee feels duty-bound to state that the attempts in public schools to create precedents like "Bande-Matram", etc., have caused great anxiety to the Muslim Public as these things wound their religious feelings.

## PART II.—(*Secondary Education*).

1. This Conference is of opinion that it is very essential to have proper co-ordination between basic and higher education so that students if they like may continue their studies after the basic education.

2. This Conference is of opinion that in the establishment of school for secondary education due concession should be made for the differing aptitude of the boys, which manifests itself generally at the age of twelve. Therefore those students who are anxious to have secondary education should be given the opportunities to join, after having received basic education for five years, the secondary schools which may be in accordance with their special aptitude.

3. If such secondary schools are to be started by private or educational bodies, such efforts should be encouraged, and the Government should give financial aid.

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## APPENDIX III.

NOTE BY THE HON'BLE PIR ILLAHI BAKSH NAWAZ ALI, MINISTER OF  
EDUCATION, GOVERNMENT OF SIND.

*Agenda.*

*To consider whether compulsion should be introduced from the age of 6 to 11 years in the first stage or from the age of 7 to 14 without any preliminary stage.*—(a) I would favour an earlier lower age-limit for compulsion for this reason that parents in the rural areas, with which any system of mass education in India will mainly be concerned, would be willing to let their children go to schools while they are still too young to be useful to them in their wage-earning occupations. Earlier the starting age of compulsion, the more willing will this vast mass of parents be to send children to schools and greater therefore will be the success of introduction of compulsion. And once the little children are "captured" with the willing consent of their parents, the new schools if they are everyday a demonstration of their utility, will induce the parents to let their children continue in these schools even after the children are old enough to help the parents in their occupations at home and in the farms. An earlier starting age-limit for compulsion is desirable also on another ground. We take the children at a stage when they are more plastic in body and mind than they would be at a later stage. I would prefer therefore starting age-limit of 6 and not 7 for compulsion, and the age-range of 6 to 11 as the first step towards a more extensive plan of compulsion where provincial finances permit it.

(b) Even with an earlier starting age-limit for compulsion, say 6 years, a preliminary stage of education for children between 3 to 5 years is necessary in any soundly concerned educational psychology as the most formative years in the earlier life of man, and these we cannot neglect. We cannot concentrate on the superstructure and leave the foundation to be laid indifferently. But this problem of "pre-basic" education, whether it should be compulsory, what its objective and methods should be, what provision should be made for the training and supply of teachers for this stage of education, the financing of it, its correlation with basic education, all these are matters which form a big problem by themselves, and ought to be considered carefully as separate items in the agenda of a future meeting of this committee.

(c) Where compulsion for the age-range of 7—14 is introduced, I think it is only natural that it should apply also to those who leave the basic schools at the age of 11, and join anglo-vernacular schools. It should apply to such cases till they attain the age of 14.

II. *To consider what should be the general aim of the entire educational system in a province, and what should be the aims (not inconsistent with the above general aim) for complete basic education for children aged 7 to 14 years, or separately for the two stages of basic education 6 to 11 and 12 to 14, and how far these stages should be complete in themselves and how far a step towards the higher range in the educational ladder.*—This

issue was framed by the Sind Government because of the chaotic state of educational planning in the country. While in every aspect of national life, we take care to consider the objective in any campaign, in education we are apt to frame schemes without considering or clearly formulating our aims, and without a clearly visualized goal for our educational programmes. We are apt to land ourselves in an endless morass of complications which will necessitate a fresh overhauling of our educational system. This will only mean a tremendous waste of national energy, enthusiasm and funds in the meanwhile. What kind of individual or citizen do we want our educational system to produce, what kind of social and political order do we want these products of our educational system to sustain, invigorate and keep alive. Should our educational system emphasize the "bread and butter" objective or should it consider also the claims of culture? Do we want our children to be trained in water-tight communal compartment and perpetuate the old animosities, or shall we broad-base our new system on a catholic conception without endangering the culture and heritage of the different communities? There is a wide conflict of conceptions about educational objectives, and it will be a pity if, at the very threshold of a new era in education, the country should have no clearly visualized goal and go on passing syllabuses and building up new organizations, without a clearly formulated objective. I feel that not only this committee but also the Central Advisory Board should address itself to this primary task before it spends its time and energy on any other problem. Let the entire country be given a right lead in this first essential factor of the Indian educational problem, and then we shall find that we shall emerge out of the chaos into which educational thought in the country has fallen, and every province will be able to evolve sound schemes of education for itself. On this subject also I would suggest a special meeting of the committee, or of the Central Advisory Board. Our entire educational organisation, the various stages of it and the nature of each, the finance, the syllabuses, all will depend on the aim we have in view, and the effectiveness of any system is largely due to a clearly formulated aim. Without such an aim, we would be like a pilgrim who just steps on to the highroad without the slightest idea about where he intends going with the result that, instead of finding his journey smooth and straight, he is subjected to vexations and inconveniences and has often to retrace his footsteps. It may possibly happen that such a pilgrim, because he has foolishly started on a journey without considering his goal, may after many years of travel and trouble, find himself again no further from the starting point, and start his pilgrimage afresh. I feel the best brains in our educational service and outside must be requisitioned to solve this first essential of our educational problems which cannot be solved in a few minutes as one item among 18 in the agenda for this meeting.

III. *To consider the question of co-ordination of the Wardha Scheme with higher education.*—The question of the co-ordination of the Wardha Scheme with higher education is bound up with the problem of our aim in education. If we have any clear aim about the Wardha Scheme, naturally that aim will guide us in framing our higher stages in education without endangering the principle of co-ordination. But have we really a clearly formulated aim in the Wardha Scheme, or is it simply the product of some good impulses or theories which have not yet been brought into vital relationship with each other from the standpoint of some central



aim? This question of co-ordination will naturally resolve itself into the following factors, each of which must be given close thought:—

- (a) What types of secondary schools, lower or higher, should be set up to serve the needs of those pupils who may join them after completing 8-year or 7-year basic education.
- (b) What types of secondary schools should be set up to serve the needs of those pupils who leave the basic schools at the end of 5 years.
- (c) Should these two classes of secondary schools have a rich variety of educational content and objectives (either as self contained units or as preparatory stages for University courses or specialised branches of learning or skills), or should they be cast into one mould in the entire province.
- (d) Should these post-basic institutions be merely some kind of a continuation of the basic education in aim and method, or should they be actuated by new aims.
- (e) What should be the relation of these post-basic secondary schools with the final stages in our educational ladder (the University courses, etc.).
- (f) The duration and educational content of each of these stages in education, after the basic education.
- (g) Administrative co-ordination of the basic and post-basic education—whether one single education board in administrative charge of all the stages is more likely to secure a unified administrative and educational policy for the educational system in a province, or is it not more convenient and sound to have separate boards for basic, post-basic secondary and University stages

All these are the several factors that make up the problem of co-ordination, and I have only stated them. A careful consideration of each factor in the problem may be undertaken or not at this meeting as the answers of opinion among the members of the committee may decide.

IV. *To consider the desirability of the division of the basic schools into primary and upper primary schools or stages and the examination of the curriculum in the light of this possible division.*—I personally feel that a bifurcation at the age of 11 plus is desirable and this point of time in the life of a pupil in a basic school and in the duration of basic education should be the point for division of schools in primary and upper primary. Considerations of adolescence, consideration of sex-developments at this stage, consideration of the need of some classes of students to desist to special types of secondary schools at an earlier stage, all these point to the desirability of a division of basic schools into primary and upper primary.

The curriculum of each of the two divisions, while guided by one central aim, should be so fixed as to recognise the general educative process that is sufficient before adolescence and the special educative process that is essential from the onset of adolescence. Perhaps in the primary stage, the subject of importance should be practical civics, organized games and special crafts, while in the primary stage the subjects

and activities should be of a more general and spontaneous nature not calling for narrow specialization or definitely productive activity.

V. *To consider the question of the transfer of children from "basic" schools at the age of 11 plus to other schools.*—If we agree to divide the basic schools into primary and upper primary stages, one of the reasons is that some students would desire transfer to other types of schools before they complete the entire period of 7 or 8 years in a basic school. But, as such transfers, if indiscriminately made, may defeat the purpose of compulsion, clear rules must be framed to regulate such transfers. In the first place, a pupil or his parent seeking to leave a basic school at the age of 11 plus must show that he wishes to leave it definitely for joining another type of school. He must indicate the school he wishes to join and obtain a note from that school to the effect that he is going to be admitted to that school. Moreover, the pupil desiring this kind of transfer must be certified to have completed the five years in the basic school satisfactorily, and should be required compulsorily to complete two or three years more at his new school.

VI, VII, VIII and IX. These items in the agenda are partially answered in my remarks on item No. V and item No. III. It is a question of "post-basic" schools, and the factors of this problem I have stated in my remarks on item No. III.

X. *To consider the desirability of providing for parallel courses of instruction for girls in the upper classes of "basic" schools.*—If at the age of 11 plus, co-education must cease, I think it would be advisable to have a differentiation of courses for the two sexes in the upper primary stage of the basic schools. In schools where co-education continues right up to the end of the 14th year the purpose of "parallel courses" would be adequately served by allowing certain options specially suited to the aptitude and requirements of girls, e.g., cooking (pastry-making, manufacture of chutneys, marmalades, etc.), sewing, embroidery, child-psychology, care of the infants) which, however, would be open for boys also to take up if they so choose. This is already dealt with partially in my remarks on items Nos. II, III and V. This also is a problem of co-ordination, the factors of which I have indicated.

XII, XIII and XIV. These have been dealt with in the Government of Sind Note which appears in the Central Advisory Board's note on action taken or proposed to be taken by Provincial Governments.

XV. *To consider whether it is desirable or practicable for the state to finance "post-basic" and college education.*—This problem is a matter of financial resources of each province. If the Wardha Scheme with an 8-year compulsion is introduced in a province, it leaves hardly anything to be spent on "post-basic" secondary schools and a college education. In this situation, if the needs of mass education are regarded as of paramount importance, post-basic and college education should be left to private enterprise. The only thing the state should do is to organize these stages of higher institutions on sound educational and administrative principles and to relax such regulations as at present impose unnecessary financial limitations on private agencies (e.g., rules about costly buildings or endowment or reserve funds, etc.). While the state must remove these unnecessary impediments from the path of private enterprise in higher education, it must still regulate the standard of teaching and attainments in these institutions as well as impose safeguards against undesirable

multiplicity of such institutions and unhealthy competition among them.

If the Wardha Scheme is not adopted or only a limited form of compulsion is introduced, it is desirable and practicable for the state to aid (not entirely finance) "post-basic" secondary schools and colleges.

XVI. *To consider the desirability of establishing a Board to co-ordinate the work of "basic" education undertaken as an experiment or otherwise in various provinces of the country.*—The idea of a central board for basic education is rather premature. I doubt whether all the provinces have really accepted once for all the principles of the Wardha Scheme, and if a Board is established, it would mean an exclusion of some provinces from its membership, though these provinces may ultimately evolve schemes of education which may be found more suited to the needs of India in general and their own area in particular than the Wardha Scheme. I suggest that the purpose of co-ordination and many other useful purposes would be served if a permanent sub-committee of the Advisory Board is set up to examine and co-ordinate *all new* experiments whether on Wardha lines or otherwise. This committee should have one member who should be frequently sent to different provinces on visits to see the working of new experiments. His reports should be annually or more frequently placed before the "New Education Sub-committee" for co-ordination and discussion, and these reports will secure further co-ordination and provide greater stimulus to the zeal for reform in provincial governments from time to time. This sub-committee should be formed of educational experts, one from each province recommended by the provincial governments.

XVII. *To consider the desirability of starting a central bureau to supply uniform literature on the topics included in the curriculum of basic schools.*

*Excellent idea.*—The bureau should also collect any useful information that may be available in any provinces and circulate it to all the provinces. It should also keep a note of all good publications on the topics, and draw the attention of all the provinces to them. If possible, a fortnightly educational bulletin with the above object and for co-ordination of new experiments in education (including the Wardha Scheme) may be published by this bureau.

XVIII. *To consider the question of the disposal of the produce of the childrens' activities.*—I am afraid, the idea that the Government of a province should purchase these articles and sell them to consumers who are expected to pay more for them than the market rates justify, is fantastic. It will never work. But a collecting agency is necessary and a central agency to distribute and sell these articles. The prices of these articles can only be regulated by the general law of demand and supply, or each school or all the schools of a taluka should give a yearly contract to some dealer for the purchase of their articles on some reasonable terms of profit to the dealer and secure through easy payments to the schools.

*A General Note.*—From the demi-official letter of the Commissioner, it looks as if the main subject for discussion at the meeting is to discuss our terms of reference generally and decide what particular features of the (Wardha) scheme we wish to study on the spot and where we can best see them. I hope, we will be discussing the terms of reference of

the Wardha Education Committee not generally but as contemplated in the agenda placed before us. That I understand, is what is meant by a general discussion of our terms of reference. That general discussion confined to the items in the agenda is, I expect, likely to lead us to a consideration of our programme for visits to Wardha scheme centres. But, though a general discussion of our terms of reference on the basis of the agenda supplied to us is welcome, I doubt whether a visit to any of the Wardha scheme centres at this stage of the experiment will be productive of much enlightenment, except in observing the method of teaching and the spirit of the scheme. Many of our problems, such as the correlation of the Wardha scheme with higher education or even the financing of the scheme, or the question of age-range or bifurcation at some stage and numerous other problems connected with the Wardha scheme will not in any way be solved by a visit to places where the Wardha scheme has just been started. We can either work towards a solution of these problems from now in the faith that the Wardha scheme is bound to produce the result of the experiment (not as contemplated but as actually proved in practice). I am strongly of the opinion that where an entirely new educational experiment is concerned, involving radical departures from the existing system, involving many financial and educational complications, we should not extend the field for experimentation on the mere assumption of its ideological soundness. While experimentation on a reasonable scale is necessary, we should not take it for granted that the experiment is bound to succeed and immediately begin solving all the other correlated problems and doing further stages of education on this assumption. I would suggest that instead of visiting the different centres where the Wardha scheme is being tried and formulating our conclusions so soon, we suggest a limited programme of minimum experimentation to all the provinces, and then an expert should visit the experimental centres in all the centres, and the reports of this expert should be annually considered by the Wardha Committee till such time as we have enough material and evidence at our disposal to formulate a forward educational policy for universal adoption all over India with only such modifications for each province as the local conditions justify.



## APPENDIX.

**REPORT OF THE FIRST COMMITTEE OF THE CENTRAL ADVISORY BOARD OF EDUCATION APPOINTED TO CONSIDER THE WARDHA EDUCATION SCHEME, 1938.**

The Central Advisory Board of Education at its meeting held in January 1938 appointed a Committee, with powers to co-opt, to examine the scheme of educational reconstruction incorporated in the Wardha Scheme in the light of the Wood-Abbott Report on General and Vocational Education and other relevant documents, and to make recommendations.

This Committee met in Simla on the 28th, 29th and 30th June 1938 and was attended by the following members:—

1. The Hon'ble Mr. B. G. Kher, Premier and Education Minister, Government of Bombay. *Chairman.*
2. The Hon'ble Dr. Syed Mahmud, Minister for Education, Government of Bihar.
3. The Hon'ble Pandit R. S. Shukla, Minister for Education, Government of the Central Provinces and Berar.
4. Lady Grigg.
5. Rajkumari Amrit Kaur.
6. Dr. Sir Zia-ud-Din Ahmad, C.I.E., Ph.D., D.Sc., M.L.A.
7. Mr. W. H. F. Armstrong, I.E.S., Director of Public Instruction, Punjab.
8. Mr. Syamaprasad Mookerjee, Vice-Chancellor, Calcutta University.
9. Dr. Zakir Husain, Principal, Jamia Millia Islamia, Delhi.
10. Khan Fazl Muhammad Khan, Commissioner and Secretary to His Exalted Highness the Nizam's Government, Department of Technical and Vocational Education.
11. Mr. J. E. Parkinson, C.I.E., Educational Commissioner with the Government of India.

Mr. R. M. Satham, C.I.E., I.E.S., Director of Public Instruction, Madras, was unable to attend the meeting as he was on leave out of India.

Mrs. Hansa Mehta, Parliamentary Secretary for Education to the Hon'ble the Prime Minister, Government of Bombay, was co-opted and attended the meeting.

2. The papers mentioned in appendix I to this Report were circulated to the members of the Committee beforehand.

3. *Genesis of the Wardha Scheme.*—The present educational system of India has of recent years been condemned on the grounds that it has failed to adjust itself to changed conditions and is "uninspired by any life-giving and creative ideal". In 1937 Gandhiji initiated in the columns of the Harijan a discussion of the Indian educational problem and offered many suggestions the main principles of which were:—

- (a) The course of primary education should be extended at least to seven years and should include the general knowledge gained up to the matriculation standard less English and *plus* a substantial vocation.

- (b) For the all-round development of boys and girls all training should so far as possible be given through a profit-yielding vocation.
- (c) This primary education, besides training the mind, should equip boys and girls to earn their bread by the State guaranteeing employment in the vocations learnt and by buying from the schools their manufactures at prices fixed by the State.
- (d) Such education taken as a whole can and must be self-supporting.
- (e) Higher education should be left to private enterprise and the State universities should be purely examining bodies.

4. An All-India National Education Conference, which was convened at Wardha in October 1937 under the presidentship of Gandhiji to consider his proposed scheme of self-supporting education, passed the following resolutions:—

- (a) that free and compulsory education be provided for seven years on a nation-wide scale;
- (b) that the medium of instruction be the mother-tongue;
- (c) that the Conference endorses the proposal made by Gandhiji that the process of education throughout this period should centre round some form of manual and productive work and that all the other abilities to be developed or training to be given should, as far as possible, be integrally related to the central handicraft chosen with due regard to the environment of the child;
- (d) that the Conference expects that this system of education will be gradually able to cover the remuneration of the teachers.

The age of entry to school should be 7 years and the standard attained at the end of 7 years schooling should approximate to the Matriculation (less English).

5. The All-India National Education Conference then appointed a Committee under the Chairmanship of Dr. Zakir Husain, Principal of the Jamia Millia Islamia, Delhi, to formulate a scheme of basic education on the lines suggested by its resolutions. This Committee worked out in detail the implication of those resolutions and its report is the authoritative Wardha Scheme of Education.

6. That Report (called for purposes of reference, the Zakir Husain Report) was in the hands of each member of the Central Advisory Board of Education Sub-Committee. Before the discussion either on the principles on which the Wardha scheme is based or on its details, Dr. Zakir Husain, whose presence at the meetings was of the utmost value, pointed out that many of the criticisms to which the Wardha Scheme had been subjected, arose from either a misconception of the fundamental ideas on which the scheme rests or from statements extracted from their context which give a false or distorted impression.

7. Dr. Zakir Husain felt that the discussion would be less discursive if he first pointed out what the Wardha Scheme was not. The removal of misunderstandings and the correction of false impressions would enable the members of the Committee to confine their remarks to the real and not to some hypothetical scheme and so avoid irrelevancy.

8. Dr. Zakir Husain mentioned that criticism was directed mainly against the idea that the scheme was conceived wholly with the set purpose of making education self-supporting by the sale of articles made by the pupils. It appeared to be a scheme of production with conscript child labour. This impression was entirely wrong. The scheme was one of education, not production. The educative value of craft-work and activity was throughout emphasised and the economic question was quite subsidiary. Education in Wardha schools would be carried on through real life situations arising from the physical and social environment of the child and the craft activity. Education through activity is now considered by all teachers as "the most effective approach to the problem of providing an integral all-sided education".

9. The Zakir Husain report defines the aim of the Wardha Scheme not as "the production of craftsmen able to practise some craft mechanically but rather the exploitation for educative purposes of the resources implicit in craft work", and sounds a warning of the obvious danger of stressing the economic aspect to the sacrifice of the cultural and educational objectives. The Wardha scheme rejects any mechanical labour in schools *merely* for production and states as a necessary condition of education that "the craft or productive work chosen should be rich in educative possibilities. It should find natural points of correlation with important human activities and interests". This view is identical with that expressed in paragraphs 10-17 and 24-25 of the Wood-Abbott Report and is in complete accord with modern educational thought. The Wardha Scheme deals only with compulsory primary education and does not imply any stoppage of grants to existing schools or colleges.

10. Hence all criticism, directly or indirectly implying that child labour is to be exploited for economic purposes, so that the schools can be wholly or even partially self-supporting is irrelevant. Critics therefore who believe that the schools will be industrial or vocational in the narrow sense and that the system is intended to force young children into prescribed vocations have not appreciated the real significance of the Wardha Scheme.

11. Dr. Zakir Husain deprecated uninformed criticism of the Scheme as a result of statements made by enthusiastic but misguided protagonists. He denied that the scheme would remove unemployment; indeed the question of unemployment was not even mentioned in his report, though he felt that the pupils of the Wardha schools would be better "employable" material than the pupils of existing schools because the Scheme was designed to produce "workers who will look upon all kinds of useful work as honourable and who will be both able and willing to stand on their own feet". He also denied that the Scheme stated or even implied either that the Government would provide employment at the end of the course or that all existing schools were to be transformed immediately into Wardha schools.

12. Dr. Zakir Husain next answered the criticism which had arisen in one form or other mainly from Muslim sources that the proposed Wardha schools neglected religious education, and were entirely secular in outlook. He admitted that the scheme prescribed no syllabus in religious education as the difficulties were obvious, but one of its foundations was a respect for all religions. The Wardha scheme neither made nor implied any alteration in the present position by which any community at its own expense is permitted to give religious teaching in Government or Local



Body schools to the pupils of that community out of school hours. Dr. Zakir Husain stated that no community need have the least apprehension that the Wardha Scheme was intended to discourage any form of religion or religious observance.

13. Misunderstanding also existed in regard to co-education. The Wardha Scheme does not make co-education compulsory to any age, and can be adopted in either boys or girls or co-educational schools. Indeed it expresses no opinion whatever whether or not co-education is desirable. The option given to parents in the Wardha scheme to withdraw their girls from school after the completion of the twelfth year does not imply that boys and girls should receive co-education up to that age.

14. After illuminating the educational and sociological bases on which the Wardha Scheme rests, Dr. Zakir Husain referred to the charge that under the Wardha scheme universities were to be merely examining bodies and as such would receive no financial aid from Government. Such a charge needs no refutation. His Report expressly excludes any discussion on secondary education for pupils above the age of 14. If the Wardha Scheme is adopted, a system of higher education co-ordinated with the Wardha organisation will have to be worked out.

15. To summarize, the Wardha Scheme—

- (a) emphasises education through activity and is not primarily concerned with the production of saleable material;
- (b) does not make spinning and weaving the only basic craft, but admits of the inclusion of any craft of equal or higher educative possibilities;
- (c) does not imply the ruling out of facilities for religious (denominational) education, where any community desires it; and
- (d) does not state or imply that the salary of the teachers must be directly met from the sale of material made in the school.

Dr. Zakir Husain's explanation removed from the minds of some members of the Committee the apprehension aroused by the literature which preceded the formulation of the Wardha Scheme and by some of the phraseology of the Wardha Scheme Report itself and so prepared the ground for a discussion of details.

16. The framers of the Wardha scheme deliberately confined their proposals to village education as the bulk of India's population resides in villages. The scheme is therefore primarily for rural areas. The Committee therefore wish to emphasise that it should first be introduced in rural areas and should not be extended to urban areas without necessary modifications though the principle of education through activity is as true for urban as for rural schools.

17. *Age range for "basic" education.*—The Zakir Husain Committee lays down a seven years course of education from the age of 7 to 14. They however, realise that by fixing 7 as the age for the introduction of compulsory education, they have neglected a very important period of the child's life. In view of financial and other considerations, they did not feel justified in including the education of children below the age of 7 as a part of the compulsory scheme, though they hoped that nursery and infant schools would be started and encouraged by the State.

18. The normal age for admission to school in all advanced countries is 5 or 6. Even in India under the existing system of education children are usually admitted to school about the age of 6. This period of a child's life offers such educative possibilities that the majority of members preferred that the age range for compulsory education should be six years to fourteen years, though children of 5 years of age should not be excluded from school. It was agreed that compulsion could not be made effective merely by passing an Act making compulsion universal. Such a course would be unwise and impracticable, but the difficulties must be faced and effective compulsion extended as rapidly as possible.

19. In provinces where compulsion is in force the age limits are usually 6 to 11 (Appendix II). The Committee agree that this higher age limit must be increased to 14. Protagonists of the Wardha Scheme prefer that if for compulsory education, any lesser period than seven years has to be taken, the higher age limit of 14 should remain and whatever period is fixed should be reckoned downward from the age of 14 rather than upward from the age of 6. In other words, compulsion from 9 years to 14 years is preferable to compulsion from 6 years to 11 years. They argue that in the present circumstances education in the early years is of little worth, causes wastage and stagnation and is therefore a waste of money and that the years of adolescence offer greater educative possibilities than the age of childhood. By retaining the higher age limit, civic and social responsibilities, permanent literacy and craft skill and interest can be the better developed.

20. The Committee whilst recommending that the age for compulsion should be 6 to 14 were not unaware of the financial and other difficulties, particularly that of the supply of suitable teachers, and feel that the approach to universal compulsory education from 6 to 14 will depend on the financial and other resources of the different provinces. A number of members prefer the compulsory period to begin from the age of 6 and gradually work up to 14.

21. *Stoppages of Education.*—All schools under the Wardha Scheme are basic schools and therefore no difference in nomenclature between "primary" and "secondary" classes or stages is made. Primary and secondary education, however, form two well-defined stages each with its own scope, aims and methods. The clear distinction in aims and methods between these stages must be kept in view. This question is discussed at length in the Hadow Report. The Central Advisory Board of Education at its first meeting held in 1935 recommended a revised school organisation consisting of a primary stage of four years, a lower secondary stage of four years and a higher secondary stage of three years. The writers of the Wood-Abbott Report "whole-heartedly commend the general layout of this proposed reconstruction". Indeed every province makes the distinction between primary and secondary or middle education though the dividing line is at the end of the fourth class in some provinces and at the end of the fifth in others. The Committee, however, felt that it was unnecessary to make any recommendation in this connection as the question would need consideration at greater length when the co-ordination of the final form of the Wardha Scheme with higher education is taken up. It was agreed unanimously that transfer to Anglo-vernacular and other schools should be permitted after the completion of the fifth class or about the age of 11 +.

22. *Medium of Instruction.*—The Wardha Scheme lays down that the medium of instruction shall be the mother-tongue, that is, the vernacular of the pupils. The Wood-Abbott Report makes the same recommendation and few will be found to disagree. The Committee unanimously approve, though they are aware that in certain provinces a difficulty might arise as more than one vernacular may be spoken. In making this recommendation the Committee wish to emphasise that the term “vernacular” connotes the “literary” language and not a dialect.

23. *Hindustani.*—The object of including Hindustani as a compulsory subject in the school curriculum is, according to the Zakir Husain Committee, to ensure that all the children educated in the “basic” schools may have a reasonable acquaintance with a common “lingua franca”. That Committee has accordingly recommended that in Hindustani-speaking areas this language should be the mother-tongue but the students as well as the teachers will be required to learn both the scripts so that they may read books written in Urdu as well as in Hindi, and that in non-Hindustani speaking areas, where the provincial language will be the mother-tongue, the study of Hindustani should be compulsory during the 5th and 6th years of school life but the children will have the choice of learning either one or other script. Thus teachers who have to deal with children of both types must know both the scripts. The Committee recognise the desirability of a common language for India which should be Hindustani with both the Urdu and Hindi scripts, though some members believe that the adoption of one common script, the Roman, would considerably simplify teaching procedure and tend to unity among different communities. There is the danger that undue influence might be brought to force children to read in the script other than that of their choice, especially when the number of such children is small. The Committee desire to emphasise that full option should be given to children to choose the script and that provision should be made for teaching them in that script.

24. *English.*—Discussion on the question whether English should be taught in the “basic” schools revealed considerable difference of opinion. Some members of the Committee feel that English should have no place in these schools which are primarily meant for rural areas. The study of English in such schools is educationally unsound. The time taken in its study is out of all proportion to the advantage gained and tends to prevent the formation of a firm foundation of education.

25. On the other hand, some members of the Committee believe that a good grounding in English is essential for higher studies and so long as English remains the medium of instruction in colleges and retains its importance in all phases of Indian life, the study of English must be started at an age earlier than 14. The Wood-Abbott Report, with its emphasis on teaching through the vernacular, admits that “the study of English, at least as an optional subject, may have to be included in the curriculum of some of the lower secondary schools where there is a public demand for it”.

The Committee, however, agree that the demand for English will be met by the possibility of transfer after the 5th class or about the age of 11 to schools where English is taught and that English should not be included in the curriculum of “basic” Wardha Schools.

26. *Craft and Manual Activities.*—The fundamental principle of the Wardha Scheme is education through productive craft activity. Perhaps

the word "creative" would be preferred to "productive" by educationists as the word "productive" may be and has been read to imply that economic production outweighs educative development. We emphasise that the Wardha Scheme stresses the educative value of craft work. That saleable material will be produced in the higher classes of the basic schools is no objection to the scheme. Indeed unless saleable material is produced the educative possibilities have not been satisfactorily exploited. The income from the sale of such material might well be applied to the upkeep of the school.

27. It is unnecessary to discuss the educative principle of learning by doing. All recent literature emphasises this principle and all schools with any pretence to be up-to-date have adopted it. Indeed the education of children through hand work in its various forms is one of the outstanding features of modern education. The Committee unanimously agree with the principle of educating children through purposeful creative activities which should gradually develop into productive work.

28. To prescribe one basic craft in the lowest classes of a school which children of the age of about 6 may join is educationally unwise. The activities in these classes arise from the child's interests and desires and should not be forced on him by the adult. Any activity which appeals to a child's interest is suitable so long as it "makes a demand on a boy's skill, judgment, sense of observation and power of calculation and combines all or some of these in a constructive effort to achieve an end which he himself wishes to achieve". As the Wood-Abbott Report says, "it is not so much the thing made or done as the integration required in the making or doing, which is of educational value". Dr. Zakir Husain himself emphasises this point in his appendix to "The Activity School", when he says "It is not the attainment of skill but the process of acquiring it that is educative". As the child becomes older his interests change. Many of them become less transitory and can be satisfied through one basic craft in which the pupils should reach a high degree of skill. Such crafts as agriculture, weaving, woodwork, metal work provide facilities for educational development, appeal to the growing child's sense of making and doing something, increase his self-respect since the product of his labour has a market value and tend to remove the false idea that manual work is objectionable.

The Committee therefore are of opinion that in the lower classes (to the age of about 10 plus) there should be no single basic craft but that the various forms of activity should serve as a preparation for, and develop into, a productive basic craft in the higher classes.

29. It naturally follows that in all basic schools, indeed in all primary classes, various kinds of material for handwork must be available. Unless sufficient material is provided, the school cannot be a centre of activity.

30. *The Teacher*.—The most important condition for the success of any educational scheme is the teacher. Revised methods may be proposed, new procedure suggested or a different organisation adopted, yet these will be ineffective and fruitless unless the teachers are able to appreciate and understand the theory leading to the changes and are competent to carry them out so that the desired intention may result. As Dr. Zakir Husain writes in his report, "it is essential that these teachers should have an understanding of the new educational and social ideology inspiring the scheme combined with enthusiasm for working it out".

31. The teacher must therefore be competent to teach to the standard of the Matriculation in the usual school subjects, must be expert in methods of teaching these subjects through craft activities and must be skilled in the processes and technique of certain basic crafts. Without such teachers the Wardha schools cannot succeed and teachers of the type required are practically non-existent at present. To attempt to introduce the scheme over any wide area would invite failure.

32. The pace at which the schools can be established will depend almost entirely on the supply of trained teachers competent to implement the scheme. Hence the Committee agree with the recommendation in the Zakir Husain Report that a reasonably large area should be selected for the experiment and an educational survey of that area should be carried out by the Education Department. Immediate steps should then be taken to train the required number of teachers in the existing normal schools which should be reorganised and restaffed to suit the new system of training. In the meantime all normal schools should be so reorganised and schools should be gradually converted to activity schools as suitable teachers become available. The provision of suitable teachers will be accelerated when pupils having passed through the Wardha schools seek training as teachers, for such pupils will have absorbed the spirit of the teaching and will be skilled in some basic craft.

33. At present the usual qualification for a teacher in a primary school is a pass in the vernacular middle school examination (held after completing an eight-year course) followed by one or sometimes two years training in a normal school. Many primary teachers do not possess even these qualifications whilst a small percentage have passed the Matriculation. This qualification, however, is for primary school purposes little if any better than the vernacular middle qualification as the gain in English often does not compensate for the loss in other ways. Obviously teachers with these qualifications cannot be expected successfully to teach satisfactorily up to a standard as advanced as their own.

34. The Wardha Scheme rightly emphasises the importance of the teacher and in order to start the scheme proposes a short emergency course of one year for specially selected teachers. The complete training course, however, is to cover a period of three years.

35. Before admission to the training college the candidate must have passed the Matriculation examination or have had at least two years' experience after passing the Vernacular Final or equivalent examination. The Committee agree that as the success of the scheme mainly depends upon the teachers it is imperative to prepare competent teachers. Some of the members, however, are apprehensive whether sufficient candidates will be forthcoming to undergo a three years training in return for the exiguous salary a primary teacher now receives.

36. Even after the three years course of training, these teachers will hardly be competent to carry out satisfactorily the work in the highest classes of the "basic" schools. The Zakir Husain Committee contemplated the necessity of employing in the higher classes teachers with better academic qualifications on a higher pay and with this view, the Committee entirely agrees.

37. The Committee recommend that effort should be made to increase the supply of competent women teachers. Both the Zakir Husain and the Wood-Abbott Reports point out the need of women teachers especially in

the lower classes. This point was discussed at some length in the Report on the Curriculum of Girls' Primary Schools (Central Advisory Board of Education, 1937) and the Committee wish to emphasise the conclusions stated therein in regard to the need of women teachers and the spheres of possible recruitment. Several members of the Committee pointed out that the present low salaries in some provinces would not attract a suitable type of recruit and that the teachers' social status in the villages was as a rule low. This was not surprising as his salary is frequently lower than that of a menial servant. The Committee endorse the recommendation of the Zakir Husain Committee that the salary of a trained primary school teacher should be Rs. 25 if possible, but in no case less than Rs. 20 per mensem. Efforts should also be made to raise the status of the teacher by giving him on public, semi-public and other occasions the respect his profession deserves.

32. "*Cultural Subjects*".—The Committee discussed whether or not it was possible to teach through the basic craft all subjects to the standard anticipated. There was general agreement that in the lowest classes education can be satisfactorily carried out through activities. In this connection the work at Moga and other schools was cited. But as the child advances in age and reaches the higher classes opportunities for centring his cultural work and intellectual progress on the basic craft become less frequent. Much of the academic work even in the highest class can be correlated with the basic craft, but all aspects of the "cultural" subjects cannot so be treated not even by stretching correlation beyond its legitimate limits. Formal instruction will therefore be necessary to teach certain elements of cultural subjects which cannot naturally be co-ordinated with the basic craft. Dr. Zakir Husain agrees that "the school has to provide for the attainment.....of some passive knowledge. I say this lest we forget that.....not all knowledge comes through our own active experience but through the accumulated experience of generations long past" (The Activity School—Ferriere).

39. *Curriculum*.—The subjects forming the curriculum and the syllabuses of individual subjects were seriously criticised from different points of view. Amongst the points discussed were the length of time allotted to the basic craft, the political tone of parts of the syllabus in Social Studies, the omission of algebra and major games, the ambitious nature of some of the subjects of study, the lack of suitable text-books, and other matters of lesser importance.

40. Dr. Zakir Husain pointed out that the proposed syllabuses were merely tentative and their interpretation depended on the teacher and on the provision of suitable text-books. Experience would show what changes were necessary and the syllabuses would be modified accordingly. The syllabuses published with the Wardha scheme do little more than indicate the nature of the work of the Wardha schools. Necessary details will be incorporated after experience. Indeed the Wardha Scheme advises the appointment in every province of "academic assistants" whose main duty will be to keep the curriculum under constant examination in the light of educational, local and other demands. Details will also be worked out in the normal schools and training colleges whilst the preparation of suitable text-books will be immediately taken in hand.

With this explanation the Committee noted that the curriculum and syllabuses of the Wardha basic schools are not rigid but will be changed as experience necessitates.

41. *Religious Education.*—The absence of all religious teaching from the curriculum was adversely commented on and this question showed fundamental differences of opinion. On the one hand it was contended that if the State makes education compulsory for all, then the State must make provision for religious education. Muslim members pointed out that religious instruction is an essential part of general education and any scheme of compulsory education which excludes religious instruction will be resented by that community.

42. Dr. Zakir Husain had already pointed out that the Wardha scheme makes provision for the teaching of the principles common to all religions in the hope of developing mutual respect and toleration. In Gandhiji's words:—

“We have left out the teaching of religions from the Wardha Scheme of education, because we are afraid that religions, as they are taught and practised today, lead to conflict rather than unity. But on the other hand, I hold that the truths that are common to all religions can and should be taught to all children. These truths cannot be taught through words or through books. The children can learn these truths only through the daily life of the teacher. If the teacher himself lives up to the tenets of truth and justice then alone can the children learn that truth and justice are the basis of all religions”.

43. The majority of members felt that religious teaching was best left to the parents or to the communities concerned, but that the State should permit religious instruction to be given in the school building, out of school hours. After considerable discussion the Committee agreed that the Government should provide facilities for religious teaching, as at present, but was not unanimous whether or not such teaching should be given in or out of school hours. The question of the inclusion of religious instruction in the curriculum is discussed in the Report of the Women's Education Committee of the Central Advisory Board of Education on the curriculum of Girls Primary Schools (1937). The majority of the members are in agreement with the views expressed in para. 11 of that report. Dr. Sir Zia-ud-din Ahmad and Khan Fazl Muhammad Khan, however, desired that religious instruction should be a school subject. The syllabus of studies for Muslim Theology should be prepared by Muslims, taught by Muslims and the State should provide all facilities.

44. *Examinations.*—The Wardha Scheme of education makes no provision for external examinations but emphasises the need of efficient and helpful supervision as contrasted with mere inspection.

45. In regard to examinations the Committee would go even further than the Wardha Scheme anticipates. The Zakir Husain report states that “the purpose of the examination can be served by an administrative check of the work of the schools in a prescribed area, by a sample measurement of the attainment of selected groups of students conducted by the Inspectors of the Education Board”. The Committee feels that even this sample measurement is open to objection and might be omitted. The standard of work in the school should be maintained by the inspecting staff and by local exhibitions of work. Promotion from grade to grade should rest entirely with the school on the results of an internal test. The

papers and work of the pupils and the results of the test should be reviewed by the inspecting officer at the time of his visit. At the end of the school course the school itself can grant a leaving certificate after a final internal examination stating merely that the pupil has satisfactorily completed the course of the basic school. The certificate may be countersigned by the supervisory or inspecting officer after he has reviewed the pupil's work in the final test if an additional check is considered necessary. For pupils who leave the basic schools for other schools about the age of 11 plus after having completed the first five classes a similar leaving certificate will suffice. Admission to these schools should be controlled by their Headmasters who may prescribe any form of test they consider suitable for their purpose.

46. *Finance*.—The Committee did not consider the question of finance as this was outside their terms of reference. They wish, however, to point out that "activity" schools will cost more to run in the beginning than the present type of school and that the rate at which compulsion proceeds and the age to which it is applied are primarily financial questions, the consideration of which must be left to the Provinces.

47. *Conclusions*.—The following is a summary of the main conclusions reached at the meeting of the Committee:—

- (1) The scheme of "basic" education should first be introduced in rural areas.
- (2) The age range for compulsion should be 6 to 14 years, but children can be admitted to the "basic" school at the age of 5.
- (3) Diversion of students from the "basic" school to other kinds of school should be allowed after the 5th class or about the age of 11 plus.
- (4) The medium of instruction should be the vernacular of the pupils.
- (5) A common language for India is desirable. This should be Hindustani with both the Urdu and Hindi scripts. Option should be given to children to choose the script and provision should be made for teaching them in that script. Every teacher should know both scripts, viz., Urdu and Hindi. Some members of the Committee suggest that the adoption of Roman script might prove a solution to the language difficulty and greatly minimise the work of both scholar and teacher.
- (6) The Wardha scheme of basic education is in full agreement with the recommendations made in the Wood-Abbott Report so far as the principle of learning by doing is concerned. This activity should be of many kinds in the lower classes and later should lead to a basic craft the produce from which should be saleable and the proceeds applied to the upkeep of the school.
- (7) Certain elements of cultural subjects, which cannot be correlated with the basic craft, must be taught independently.
- (8) The training of teachers should be reorganised and their status raised.
- (9) No teacher should receive less than Rs. 20 per mensem.



- (10) Efforts should be made to recruit more women teachers and to persuade girls of good education to take up teaching.
- (11) Basic schools should be started only when suitable trained teachers are available.
- (12) The curriculum will need revision in the light of experience.
- (13) English should not be introduced as an optional subject in basic schools.
- (14) The State should provide facilities as at present for every community to give religious teaching, when so desired but not at the cost of the State.
- (15) No external examinations need be held. At the end of the basic school course a leaving certificate based on an internal examination should be given.
- (16) Pupils wishing to join other schools at the end of the 5th class (age 11 +) should also be granted a leaving certificate.
- (17) Promotion from class to class will be determined by the school, though the results of the internal examinations should be subject to the supervisor's inspection.

B. G. KHER (*Chairman*).

SYED MAHMUD.

R. S. SHUKLA.

GERTRUDE C. GRIGG.

AMRIT KAUR.

ZIA-UD-DIN AHMAD.

W. H. F. ARMSTRONG.

S. P. MOOKERJEE.

FAZL MUHAMMAD KHAN.

HANSA MEHTA.

J. E. PARKINSON.

On account of his illness, Dr. Zakir Husain has not been able to sign the Report. He has, however, approved it.

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## APPENDIX I.

The following is a list of papers which were circulated to the members of the Committee:—

1. Resolution passed at the third meeting of the Central Advisory Board of Education, held on the 28th January 1938, appointing this Committee.
2. Proceedings of the All-India National Education Conference held at Wardha in October 1937 to consider Gandhiji's scheme of basic education.
3. Report of the Zakir Husain Committee and the proposed syllabus prepared by it.
4. Note by Mr. J. E. Parkinson, C.I.E., Educational Commissioner with the Government of India, on the objections to the Wardha Education Scheme.
5. Note by Khan Fazl Muhammad Khan, Commissioner and Secretary to His Exalted Highness the Nizam's Government, Department of Technical and Vocational Education, on the Wardha Education Scheme with a chart illustrating a possible scheme of re-organisation of education in Indian schools.
6. Note on the action taken, or proposed to be taken, by the Provinces, on the Wardha Education Scheme.
7. Resolution passed by the All-India Educational Conference on the Wardha Education Scheme at its thirteenth session held in Calcutta in December 1937.
8. Report of the Madras Teachers' Guild on the Wardha Scheme of Basic Education.
9. Resolution passed by the Indian National Congress at Haripura in February 1938 on national education in India.
10. Resolutions passed at the first meeting of the Central Advisory Board of Education held in December 1935 on educational reconstruction in India.
11. Circular letter to Provincial Governments and Local Administrations No. F. 1-6 (a)/36-C. A. B., dated the 30th April 1936, on the resolutions of the Central Advisory Board of Education on educational reconstruction.
12. Resolutions passed by the Indian Universities' Conference in 1934 on educational reconstruction.
13. Circular letter to Provincial Governments and Local Administrations No. F. 83-1/34-E., dated the 25th January 1935, on educational reconstruction in India.
14. Circular letter to Provincial Governments No. L-1834, dated the 20th January 1938, on Government recruitment and unemployment.
15. Report on Vocational Education in India by A. Abbott, C.B.E., formerly His Majesty's Chief Inspector of Technical Schools, Board of Education, England, with a section on General Education and Administration by S. H. Wood, M.C., Director of Intelligence, Board of Education, England.
16. Views of the Provincial Governments on the recommendations made in the Wood-Abbott Report.

17. Report on Vocational Education in Hyderabad State by A. Abbott, C.B.E., formerly His Majesty's Chief Inspector of Technical Schools, Board of Education, England.

18. Report of the Sub-Committee for the re-organization of education in the Hyderabad State.

19. Vidya Mandir Scheme—A way to the spread of free and compulsory mass education within a fixed period.

20. Vidya Mandir Syllabus and *Ad Interim* Report of the Syllabus Committee, Central Provinces and Berar.

21. Report on Educational Reconstruction and Vocational Training in the Central Provinces and Berar.

22. Report on Vocational Training in Primary and Secondary Schools and consequent reorganization in Bombay.

23. School Education in Bengal—Resolution No. 1037-Edn., dated the 9th March 1937.

24. Report of the Women's Education Committee of the Central Advisory Board of Education on primary education of girls in India, 1936.

25. Report of the Women's Education Committee of the Central Advisory Board of Education to consider the curriculum of Girls' Primary Schools in India, 1937.

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## APPENDIX II.

										Age range of compulsion. Years.	
Madras	.	.	.	.	.	.	.	.	.	6—11.	
Bombay	.	.	.	.	.	.	.	.	.	6—11.	
Bengal	.	.	.	.	.	.	.	.	.	6—10.	Under the Bengal Pri- mary Educa- tion Act, 1919.
										6—11.	Under the Bengal (Rural) Primary Edu- cation Act, 1930.
United Provinces	.	.	.	.	.	.	.	.	.	6—11.	
Punjab	.	.	.	.	.	.	.	.	.	6—11.	
Bihar and Orissa	.	.	.	.	.	.	.	.	.	6—10.	
Central Provinces	.	.	.	.	.	.	.	.	.	7—11.	
Assam	.	.	.	.	.	.	.	.	.	6—11.	
Delhi	.	.	.	.	.	.	.	.	.	6—11.	

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# List of Agents in India from whom Government of India Publications are available

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- BHAR**:—Superintendent, Government Printing, P. O. Gulzarbagh, Patna.
- BOMBAY**:—Superintendent, Government Printing and Stationery, Queens Road, Bombay.
- CENTRAL PROVINCES**:—Superintendent, Government Printing, Central Provinces, Nagpur.
- MADRAS**:—Superintendent, Government Press, Mount Road, Madras.
- NORTH-WEST FRONTIER PROVINCE**:—Manager, Government Printing and Stationery, Peshawar.
- ORISSA**:—Press Officer, Secretariat, Cuttack.
- PUNJAB**:—Superintendent, Government Printing, Punjab, Lahore.
- SIND**:—Manager, Sind Government Book Depot and Record Office, Karachi (Sadar).
- UNITED PROVINCES**:—Superintendent, Printing and Stationery, U. P., Allahabad.

## (b) PRIVATE BOOK-SHILLERS

- Aero Stores, Karachi.
- Army Munaketry Stores, Moga (Punjab).\*
- Banthiya & Co., Ltd., Station Road, Ajmer.
- Bengal Flying Club, Dum Dum Cantt.†
- Bhawani & Sons, New Delhi.
- Bombay Book Depot, Charni Road, Girgaon, Bombay.
- Book Company, Calcutta.
- Booklover's Resort, Taluk, Trivandrum, South India.
- Bookingham & Co., Booksellers and Stationers, Greenwood Street, Slakot City.
- Burma Book Club, Ltd., Rangoon.
- Chandrakant Chimanlal Vora, Ahmedabad.
- Chatterjee & Co., 3, Bacharam Chatterjee Lane, Calcutta.
- Chiney & Sons, Booksellers, etc., Dhanoli, Nagpur, C. P.
- Chukerverty, Chatterjee & Co., Ltd., 13, College Square, Calcutta.
- Das Gupta & Co., 54/3, College Street, Calcutta.
- Deane Brothers, Home Service, 456, Raviwar Peth, Poona 2.
- Delhi and U. P. Flying Club, Ltd., Delhi.†
- English Book Depot, Ferozepore.
- English Bookstall, Karachi.
- English Book Store, Abbottabad, N.-W. F. P.
- Faqir Chand Marwah, Peshawar Cantonment.
- Higginbothams, Madras.
- Hindu Library, 137-F, Balaram De Street, Calcutta.
- H. L. College of Commerce, Co-operative Stores, Ltd., Ahmedabad.
- Hyderabad Book Depot, Chaderghat, Hyderabad (Deccan).
- Ideal Book Depot, Rajpur Road, Dehra Dun.
- Imperial Book Depot and Press, near Jama Masjid (Machhiwallan), Delhi.
- Imperial Publishing Coy., Lahore.
- Indian Army Book Depot, Dayalbagh, Agra.
- Indian Army Book Depot, Daryaganj, Delhi.
- International Book Service, Poona 4.
- Jain & Bros., Sarafa Road, Gwalior, Messrs. M. B.
- Jains & Bros., Mori Gate, Delhi, and Connaught Place, New Delhi, Messrs. J. M.
- Joishi, News Agent, Devzad Baria, via Piprod, Bombay, Mr. V. G.
- Kandl & Co., 6, Commercial Buildings, The Mall, Lahore, Messrs. N. C.
- Karnataka Sahitya Mandir Publishers and Direct Importers, Dharwar (S. Sind).
- Khatibzai, 17-A, City Road, Allahabad.
- Krishnaswami & Co., Teppakulam P. O., Trichinopoly Fort, Messrs. B.
- Lahiri & Co., Ltd., Calcutta, Messrs. S. K.
- London Book Co. (India), Arbab Road, Peshawar.
- Lyall Book Depot, Lyallpore.
- Malhotra & Co., Post Box No. 94, Lahore, Messrs. U. P.
- Minerva Book Shop, Anarkali Street, Lahore.
- Modern Book Depot, Bazar Road, Slakot Cantt.
- Mohania Dossabhai Shah, Rajkot.
- New Book Co., "Kitab Mahal", 188-90, Hornby Road, Bombay.
- Newman & Co., Ltd., Calcutta, Messrs. W.
- Oxford Book and Stationery Company, Delhi.
- Parikh & Co., Baroda, Messrs. B.
- Pioneer Book Supply Co., 219, Cloth Market, Delhi.
- Popular Book Depot, Grant Road, Bombay.
- Punjab Religious Book Society, Lahore.
- Raghunath Prasad & Sons, Patna City.
- Rama Krishna & Sons, Booksellers, Anarkali, Lahore.
- Ram Krishna Bros., Opposite Bishrambag, Poona City.
- Ramesh Book Depot and Stationery Mart, Kashmir Gate, Delhi.
- Ray & Sons, 43, K. & L. Edwardes Road, Rawalpindi, Messrs. J.
- Roy Chowdhury & Co., 72, Harrison Road, Calcutta, Messrs. N. M.
- Saraswati Book Depot, 15, Lady Hardinge Road, New Delhi.
- Sarcar & Sons, 45, College Square, Calcutta, Messrs. M. O.
- Sharda Mandir, Ltd., Nai Sarak, Delhi.
- Standard Book Depot, Cawnpore.
- Standard Book Depot, Delhi.
- Standard Bookstall, Karachi.
- Standard Bookstall, Quetta.
- Standard Law Book Society, 79/1, Harrison Road, Calcutta.
- Subhan Bookseller and Publisher, Bilsapur, C. P., Mr. M. A.
- Tara & Sons, Rasmak (India), Messrs. B. S.
- Taraporewala Sons & Co., Bombay, Messrs. D. B.
- Thacker & Co., Ltd., Bombay.
- Thacker, Spink & Co. (1923), Ltd., Calcutta.
- Tripathi & Co., Booksellers, Princes Street, Kaimbadevi Road, Bombay, Messrs. N. M.
- University Book Agency, Kacheri Road, Lahore.
- Upper India Publishing House, Ltd., Literature Palace, Ammuddaula Park, Lucknow.
- Varadachary & Co., Madras, Messrs. F.
- Venkatasubban, A., Law Bookeller, Vellore.
- Wheeler & Co., Allahabad, Calcutta and Bombay, Messrs. A. H.
- Young Man & Co. (Regd.), Ngerton Road, Delhi.

\* Agent for Army Publications only.

† Agents for Publications on Aviation only.

## **PREFACE.**

This pamphlet describes the methods of recruiting and training candidates for admission into the commissioned ranks of the Royal Indian Navy, the financial assistance to be given to their parents or guardians, including an estimate of the expenditure likely to be necessary in addition to Government assistance, and the more important of the general conditions of service in the Royal Indian Navy. It is published for the information of inquirers, but does not take the place of the regulations for the service.



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**Regulations respecting the recruitment, training, rates of pay, etc., etc., of  
commissioned officers of the Royal Indian Navy.**

**CHAPTER I.**

**FUNCTIONS AND STRENGTH OF THE ROYAL INDIAN NAVY.**

1. The functions of the Royal Indian Navy in peace will be as follows :—

Training of personnel for service in war.

Organization of the naval defences at ports which are under the control of the Government of India.

Marine survey work within the prescribed limits.

Marine transport work for the Government of India.

2. The force consists at present of five escort vessels, one patrol craft vessel, two trawlers, one survey ship and a depot ship, in addition to the necessary ancillary craft.

3. The sanctioned establishments of officers in the sea-going branch of the Royal Indian Navy are as follows :—

(a) *Executive Branch—*

	Number of appoint- ments.
Flag Officer Commanding, Royal Indian Navy . . . . .	1
Commodore . . . . .	1
Captains . . . . .	5
Commanders . . . . .	12
Lieutenant-Commanders, Lieutenants and Sub-Lieutenants . . . . .	58
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In addition to this number, 11 officers of various ranks are employed in shore and port appointments under the Commerce Department of the Government of India.

(b) *Engineer Branch—*

Engineer-Captain . . . . .	1
Engineer-Commanders . . . . .	7
Engineer-Lieutenant-Commanders, Engineer-Lieutenants and Engineer-Sub-Lieutenants . . . . .	29
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In addition to this number, 16 engineer officers are employed in shore and port appointments under the Commerce Department of the Government of India.

The appointment of Flag Officer Commanding, Royal Indian Navy, is now held by an officer of the Royal Navy; but officers of the Royal Indian Navy are eligible for the post and it is the intention that it should normally be held by an officer of the Royal Indian Navy.

## CHAPTER II.

## RECRUITMENT OF CANDIDATES FOR THE EXECUTIVE BRANCH.

1. When necessary, competitive examinations will be held to select candidates to be trained for appointment as executive officers in the Royal Indian Navy. These examinations will ordinarily be held as follows :—

- (a) *For European candidates.*—In London (see Chapter III).
- (b) *For Indian candidates competing in India.*—In Delhi in March and/or October (see Chapter IV).
- (c) *For cadets of the Indian Mercantile Marine Training Ship "Dufferin."*—In Bombay in the first week of October (see Appendix IV).

When necessary, the selection of Indian candidates for the Engineer Branch will be made from the examination referred to at (b) above (see also Chapter IV, paragraph 9).

2. The number of Cadetships offered for competition in each examination will be announced well in advance.

3. One-third of the appointments required to fill vacancies in the officer cadre of the Royal Indian Navy will be reserved for Indians, subject to their reaching the qualifying standard. If the number of qualified candidates or the number of vacancies at any examination does not permit of this ratio being followed at that particular examination, the necessary adjustment will be made at the following examination.

4. In any year in which there is more than one vacancy for Indians to be filled at least one of those vacancies will, at the discretion of the Government of India, be reserved for cadets of the Indian Mercantile Marine Training Ship "Dufferin". In case, only one such vacancy can be offered in the two branches (executive and engineer) taken together, the Government of India will decide whether competition for it should be open or confined to cadets of the "Dufferin."

5. A candidate will not be accepted if he is not, in the opinion of the Secretary of State for India, or the Government of India, as the case may be, in all respects suitable to hold a commission in the Royal Indian Navy.

## CHAPTER III.

**EXAMINATION TO BE HELD IN ENGLAND FOR THE APPOINTMENT OF EUROPEAN CANDIDATES FOR THE EXECUTIVE BRANCH.**

1. The examination is a joint one for the Royal Navy (Special Entry), Army and Air Force, at which candidates may compete, subject to their satisfying the necessary conditions as to age, etc., for appointment as cadets for the Royal Indian Navy, see the "Regulations for the special entry of naval cadets," which are published in the Appendix to the Navy List.

2. Candidates will be required, irrespective of whether they have been passed fit in connection with a previous examination, to present themselves for medical examination, and must be found physically fit according to the standards laid down for the Royal Indian Navy. (Details of the physical requirements are contained in Appendix I.)

Candidates who are not also candidates for the Royal Air Force, the Royal Navy, or the Army will be examined by the Medical Board at the India Office. In cases where a candidate is entered for more than one of the Services acceptance by the Air Force Medical Board or the Naval Medical Board will cover acceptance for the Royal Indian Navy. Acceptance by the Army Medical Board will also cover acceptance for the Royal Indian Navy provided the candidate's eyes are tested by the naval standard. A candidate failed by the Air Force, the Naval, or the Army Board who is also entered for the Royal Indian Navy will be given a subsequent opportunity of appearing before the India Office Medical Board.

The Medical examination will be held at about the same time as the interview which forms part of the examination as a whole. Candidates must be in good health and free from any physical defect of body, impediment of speech, defect of sight or hearing and also from any predisposition to constitutional or hereditary disease or weakness of any kind, and they must be in all respects well-developed and active in proportion to their age.

## CHAPTER IV.

**EXAMINATION FOR THE SELECTION OF INDIANS FOR THE EXECUTIVE AND ENGINEER BRANCHES.**

1. Examinations will be held in Delhi conjointly with the March and/or October examinations for entrance to the Indian Military Academy, Dehra Dun. The question papers will be set and the answers of the candidates will be marked under the discretion of the Federal Public Service Commission (India). The arrangements for the admission of candidates taking the examination in London will be in the hands of the Civil Service Commissioners, Burlington Gardens, London, W. 1, who will arrange for the Interview and Record Board for candidates who take the examination in London.

2. (i) A candidate should apply to be admitted to the examination before such date and in such form as the Federal Public Service Commission may prescribe. The application should be made through the Collector or Deputy Commissioner of the district in which his parents reside at the time of the application, or have previously resided for a period of not less than three years, or in which he has himself resided, otherwise than as a student at an educational institution only, for a like period. A candidate shall, except in very exceptional circumstances, appear personally before the District officer or the Political officer or Agent who signs the attestation form.

(ii) In the case of Calcutta, applications should be submitted through the Commissioner of Police.

(iii) Cadets of the Prince of Wales's Royal Indian Military College, Dehra Dun, should submit their applications through the Principal of the College.

(iv) A candidate resident in an Indian State should submit his application through the Durbar who will forward it to the Political Officer or Agent.

(v) No candidate should make more than one application in respect of this examination.

3. A candidate must be an unmarried man and either—

(a) a British subject of Indian domicile whose father (if alive) is a British subject or a subject of a State in India, or a British protected person of the tribal areas; or (if dead) was at the time of his death either a British subject or a subject of a State in India or a British protected person of the tribal areas, or a person in the permanent service of the Crown or a person who had retired from that Service;

(b) a Ruler or a subject of a State in India or a British protected person of the tribal areas.

Provided that in the case of a British subject the requirements of parts (a) and (b) of this rule may be waived by the Secretary of State if he is satisfied that their observance would occasion exceptional hardship, and that the candidate is so closely connected by ancestry and upbringing with His Majesty's dominions as to justify special treatment.

4. A candidate must be unmarried and no candidate will be permitted to marry while under training.

5. A candidate must be over 17½ and under 19½ on the first day of the month immediately following the commencement of the entrance examination. With the form of application a candidate is required to furnish attested copies of any certificates showing when he entered or left school or matriculated at a

University and certificates of any examination he has passed. If a candidate claims that his age is other than that mentioned in the foregoing documents, he should state fully (sending any necessary documents) the evidence on which the claim is based. Horoscopes are not accepted as evidence of age, unless supported by other evidence.

6. A candidate must be in good mental and bodily health and free from any physical defect likely to interfere with the efficient performance of the duties of a commissioned officer in the Royal Indian Navy. A candidate who, after examination by a Medical Board is found not to satisfy these requirements will not be selected for training. Only candidates who are successful in the entrance examination will be medically examined. Candidates are recommended to consult a Civil Surgeon as to their physical suitability before entering for the examination. (See Appendix I.)

7. A candidate will be required to furnish a declaration, signed by his parent or guardian, to the effect that it is the candidate's intention (if selected) to make the Royal Indian Navy his permanent profession and also a declaration by his parent or guardian that the candidate is unmarried, and that if the candidate marries, his parent or guardian will immediately inform the Federal Public Service Commission that he has married.

8. A candidate must satisfy the Federal Public Service Commission that he is suitable in all respects for employment as a commissioned officer in the Royal Indian Navy. The decision of the Federal Public Service Commission as to the eligibility or otherwise of a candidate shall be final.

9. The maximum number of candidates to be admitted to any examination at Delhi may, in the discretion of the Governor General in Council, be limited to such number as the Governor General in Council may decide. If a limit is imposed and the number of candidates exceeds that limit, the Federal Public Service Commission shall select from among the applicants those who shall be admitted to the examination, and shall have regard in so doing to the suitability of the applicants for employment as commissioned officers in the Royal Indian Navy.

10. (i) Every candidate must obtain the necessary copies of the printed form of application for admission to the examination, which will be furnished on application by letter, addressed to the Local Government or Administration or Durbar concerned. The form must be filled up in the candidate's own handwriting and submitted to the Federal Public Service Commission through the Local Civil Authority (see paragraph 2 above).

(ii) The closing date for applications is usually the 1st July. Unless otherwise announced in the notice of an examination, no application can be considered after that date.

(iii) The application should be sent by registered post. If a candidate fails to register his application he does so at his own risk. If a candidate desires an acknowledgment he should also send his application "Acknowledgment due."

(iv) No recommendations, except those invited in the form of application, will be taken into consideration. Any attempt on the part of a candidate to obtain support for his application by other means may disqualify him for admission.

(v) Candidates must pay the following fees :—

(i) Rs. 7-8-0 with the application form.

(ii) If accepted for admission to the examination, Rs. 50 immediately after acceptance.

No claim for a refund of these fees will be entertained.

The same amount of fees will be payable by a candidate whether he competes for admission to the Royal Indian Navy or the Indian Military Academy, Dehra Dun, or both, at examinations held concurrently for both.

11. Candidates travelling to Delhi for the examination must do so at their own expense and make their own arrangements for accommodation in Delhi.

12. Parents and guardians must ensure that candidates are provided with sufficient funds to meet the cost of their expenses while attending the examination.

13. No candidate shall be admitted to the examination unless he holds a certificate of admission from the Federal Public Service Commission.

14. Vacancies will be filled by the candidates who obtain the highest marks at the competitive examination.

15. The examination will include the following subjects (see syllabus in Appendix II) and the maximum number of marks obtainable for each subject is as follows :—

	Maximum marks.
(1) Interview and Record Board . . . . .	500
(2) English Language . . . . .	300
(3) General Knowledge . . . . .	200
(4) One of the following :—	
(a) French . . . . .	300
(b) German . . . . .	300
(c) English History from 1485 . . . . .	300
(d) Indian History . . . . .	300
(5) Lower Mathematics . . . . .	300
(6) Physics . . . . .	300
(7) Chemistry . . . . .	300
<i>Optional.</i>	
(8) Freehand Drawing or Geometrical Drawing or Geography . . . . .	200

The Interview and Record Test at Delhi will be conducted by a Board consisting of a Member of the Federal Public Service Commission (nominated by the Commission) as Chairman, two officers of the Royal Indian Navy, and one non-official gentleman to be nominated by the Government of India.

A candidate shall make certain that his selection of subjects is in accordance with the regulations.

No candidate will be accepted as a Cadet and Apprentice who obtains less than 175 marks for Interview and Record or less than 630 marks in all the written papers taken together (these marks being 35 per cent. in each case) except Freehand or Geometrical Drawing or Geography, or less than 1,200 marks in all the subjects taken together (these marks being 50 per cent.).

From the marks assigned to candidates in each subject, such deduction will be made as the Federal Public Service Commission may consider necessary in order to secure that no credit is allowed for merely superficial knowledge.

If a candidate's handwriting is not easily legible, a deduction, which may be of considerable amount, will be made on this account from the total marks otherwise accruing to him.

16. Candidates who are declared successful in the entrance examination, will be medically examined (see Appendix I), at the centre nearest to their residence, under arrangements to be made by the Secretary to the Government

of India, Defence Department (Navy Branch). They will be instructed as to where and when they should appear before the medical board. They will not be selected for training unless pronounced physically fit for service in the Royal Indian Navy. Candidates who were declared medically fit in connection with a previous examination will not be exempt from re-examination. Candidates travelling to the place appointed for the medical test will do so at their own expense and must make their own arrangements for accommodation.

Medical boards will communicate the results of the medical examination to candidates immediately after the examination.

17. Candidates who are pronounced unfit by the medical boards may, if they are not satisfied with the finding of such medical boards, appeal to the Secretary to the Government of India, Defence Department (Navy Branch), on the date on which the result of their medical examination is known to them. The Secretary to the Government of India, Defence Department (Navy Branch), will, after considering such appeals, arrange, if necessary for their re-examination by another medical board called "The Appeal Medical Board". Appeals for re-examination will be accompanied by a fee of Rs. 40, in each case, without which no appeal will be considered. If the appeal proves successful, or, if for any reason, an "Appeal Medical Board" is not convened, the appeal fee of Rs. 40 will be returned to the appellant.



## CHAPTER V.

## TRAINING OF CANDIDATES FOR EXECUTIVE AND ENGINEER BRANCHES.

1. The training of candidates, whether selected from the examination in England or from that held in India, will be conducted in naval establishments in the United Kingdom.

2. In order to give them some experience of naval customs and routine before proceeding to England for training, candidates selected from the open competitive examinations held in India will undergo training in the Royal Indian Navy Boys' Training Establishment for a period of about 4 months. This training will be commenced as soon as convenient after the candidates have been selected.

3. While undergoing training in the Royal Indian Navy Boys' Training Establishment they will rank as Cadets, R. I. N., and will wear the appropriate uniform. They will be under Naval Discipline, but the time thus spent is to be regarded as preliminary training and will not count as part of the Full Initial Training Period nor will such time count as service for promotion.

4. Successful candidates will be entered as Royal Indian Navy Cadets and will spend the first term of four months in His Majesty's Ship "Excellent" (The Shore Gunnery School). Thereafter, they will be appointed for an eight months' training course, divided into two terms, in H. M. S. "Vindictive", the sea-going cruiser.

5. Before entry as Royal Indian Navy Cadet, a certificate by the school or other responsible authority to the effect that the candidate is able to swim at least 50 yards, must be forwarded to the Secretary, Military Department, India Office, by boys selected in England, and to the Secretary to the Government of India, Defence Department (Navy Branch), by those recruited in India.

6. A Cadet must also produce, on joining, a health certificate to the effect that he has not suffered from, or been exposed to, infectious disease during the previous 30 days. In the case of Indians selected in India, the health certificate must be signed by a commissioned medical officer, or the Civil Surgeon of the district in which the boy has been residing, and will relate to the period of 30 days before embarkation.

7. The date on which they will be required to join the training ship in England will be communicated to Cadets appointed in England by the Secretary, Military Department, India Office, and to Cadets selected in India by the Secretary to the Government of India, Defence Department (Navy Branch).

8. Cadets undergoing initial training and Sub-Lieutenants of the Royal Indian Navy while under training, will be granted leave under Royal Naval Regulations.

9. During the period of training on His Majesty's ship "Vindictive", Royal Indian Navy Cadets will be subject to the same regulations as Royal Navy Cadets generally. They will be regarded as on probation, and a Cadet may be required to be withdrawn at any time if, in the opinion of the Admiralty ;

- (i) he fails to reach a satisfactory standard ; or
- (ii) his conduct is unsatisfactory ; or
- (iii) he is considered unsuitable for naval service.

10. Subject to their passing the qualifying examination and otherwise being considered fit, Cadets are rated as Midshipmen on completion of twelve months' training.

11. In the Executive Branch two years is the normal period of training as Midshipmen. On completion of this course Midshipmen are appointed Acting Sub-Lieutenants whose normal period of training is nine months.

In the Engineer Branch training is carried on at Keyham. The normal period of training as Midshipmen is two years. On completion of this course Midshipmen are appointed Acting Sub-Lieutenants with a normal period of training of four months. Thereafter they are confirmed as Sub-Lieutenant(E), and given further training for one year and four months.

12. Cadets, Midshipmen and Acting Sub-Lieutenants and Sub-Lieutenants (Engineer Branch) under training, will wear the same uniform as similar rank of the Royal Navy with the exception that the buttons will be the same as those of officers of the Royal Indian Navy.

13. The Secretary of State for India has appointed an official guardian to look after the interests of Indian cadets under training, but parents and guardians are at liberty to nominate a private guardian. The guardian, whether official or private, will take over full financial and other responsibility in respect of each cadet from the date of his arrival in England and will be solely responsible to the parent or guardian in India for the disbursement of monies on his behalf. If a private guardian is selected, his name and address should be communicated to the Secretary to the Government of India, Defence Department (Navy Branch) before a candidate selected in India proceeds to England.

## CHAPTER VI.

## GOVERNMENT LIABILITIES DURING TRAINING.

1. Candidates selected from India will be granted free passages from their homes when nominated to join the training institutions in the United Kingdom. The amount admissible on account of railway, river and sea journeys within Indian limits will be restricted to one second class fare for each candidate. The amount admissible for road journeys will be restricted to the mileage rates of second class civil officers when travelling on duty. Second class passages by sea from India to the United Kingdom will be arranged by the Flag Officer Commanding, Royal Indian Navy, Bombay, under orders from the Government of India. The passage will be booked ordinarily by private vessels.

In respect of their journey from their homes to the Royal Indian Navy Boys' Training Establishment (*vide* Chapter V. paras, 2 and 3), candidates will be granted one second class fare by rail, river and sea, and second grade road mileage within Indian limits. A similar concession will be admissible on their return journey on the completion of the training.

Applications for payment of travelling allowances within the Indian limits should be made to the Controller of Naval Accounts, Bombay.

2. Candidates for both Executive and Engineer Branches will receive pay at the rate of one shilling a day as Cadets, five shillings a day as Midshipmen, and seven shillings and eight pence a day as Acting Sub-Lieutenants. Engineer Cadets on appointment as Sub-Lieutenants will be paid at the rate of £164 5s. per annum.

Royal Indian Navy junior officers do not become eligible for full R. I. N. rates of pay and allowances until they have arrived in India and reported for duty on an R. I. N. ship.

3. In addition to the concessions in paras. 1 and 2 above, each Indian candidate will be eligible for a clothing allowance of £75 during the first year towards the cost of European kit, which is estimated at £100, and also for Overseas pay at the rate of £50 per annum as Cadet and Midshipman, and £30 per annum as Acting Sub-Lieutenant and Sub-Lieutenant (E). These allowances will be paid to the official or private guardian of the Cadet (see para. 13 of Chapter V) by the India Office.

4. Once the parent or guardian of a candidate has made the declaration which is required under the rules for the examination of candidates for the Royal Indian Navy, that he is in a position, and will be prepared, to discharge the financial obligations attached to the training of his son or ward, no financial assistance, in addition to that admissible under paragraph 3 above, will be granted. To avoid hardship in *bona fide* deserving cases, the Government of India, Defence Department, (Navy Branch) will consider applications for additional financial help from the parent or guardian of a candidate, provided that it is conclusively proved that since making the above declaration, his financial position has unexpectedly deteriorated to such an extent that it will be not possible for him to send his son or ward to the United Kingdom for training without additional financial assistance from Government.

5. On appointment as acting Sub-Lieutenant or Acting Engineer Sub-Lieutenant, as the case may be, a grant of £75 to each officer will be made

towards the cost of uniform. An officer to whom this grant has been made and who fails to serve in the Royal Indian Navy for two years with effect from the date of appointment, will be required to refund one-fourth of the allowance in respect of each period of six months (or part of such period) by which his service falls short of two years. The refund may, however, be waived in whole or in part, at the discretion of the Government of India, if the failure to complete two years' service is due to death, invaliding through causes beyond the officer's own control, or other special circumstances.

## CHAPTER VII.

**EXPENSES TO BE INCURRED AND LIABILITIES TO BE UNDERTAKEN BY PARENTS OR GUARDIANS OF CANDIDATES.**

1. While selected Indian Boys are under preliminary training in the Royal Indian Navy Boy's Training Establishment (*vide* Chapter V, paras. 2 and 3), their parents or guardians will be required to pay Rs. 60 per mensem, for each boy in respect of board, lodging, tuition and medical attendance, and in addition a sum of Rs. 10 per mensem on account of pocket money, laundry and use of text books and stationery.

Private money up to a maximum of Rs. 30 per mensem may be provided by a boy's parent or guardian. All private money shall be deposited with the Commanding Officer of the Establishment who will be responsible for its disbursement and no Banking Account or Cheque Books will be allowed.

The parent or guardian of each cadet will also be required to provide him with an outfit as detailed in Appendix III. A certain proportion of the items laid down may be purchased from the Establishment and the remainder may be obtained from a tailor authorised by the Commanding Officer, who will give parents or guardians any advice which they may require in this matter.

The outfit will be of use to cadets during their subsequent training in England.

2. Every candidate should, prior to embarkation for the United Kingdom, satisfy the Flag Officer Commanding, Royal Indian Navy, that he has in his possession £5 in English currency to cover expenses to be incurred during the voyage.

3. Before a candidate is permitted to embark for England for training, his parent or guardian must deposit in a bank in India for transfer direct to the official or private guardian the amount of £260, the estimated expenditure to be met by the parent or guardian during the entire period of training in the United Kingdom. The receipt of the bank or other evidence to show that the amount has been duly deposited must be forwarded to the Secretary to the Government of India, Defence Department (Navy Branch).

4. Interest will be allowed on the unspent balances of the deposits made by the parents or guardians of Indian candidates under training in England. These deposits will be kept in a separate account at the Post Office Savings Bank in England and interest thereon will be allocated at the end of each year at the rate received from the Post Office Savings Bank during the preceding twelve months.

5. The parent or guardian is required to make on behalf of a Cadet a private allowance at the rate of £36 per annum during his period of cadetship, *i.e.*, for one year only. This allowance is utilised by the Admiralty to provide for all necessities incidental to the Cadet's training (*e.g.*, purchase of books, etc.). Pocket-money, amounting to £4 8s. per term, is defrayed from this allowance. The private allowance, together with the Cadet's pay of one shilling a day, is calculated to be normally sufficient to meet all the expenses of a British boy other than clothing, travelling expenses and expenses when on leave; but should this not be the case, the deficit, which would probably be of small amount, would be chargeable to the parent or guardian. The Admiralty consider it undesirable that young officers should have the control of large sums of money and arrangements can be made for any special contingencies to be advanced by the Accountant Officer of the Cadet's ship, with the authority of the Commanding Officer, and recovered from

the parent or guardian. Private allowance ceases on a Cadet being rated Midshipman, but parents or guardians must be prepared, during the period as Midshipman, to give the officer some small assistance.

6. The parent or guardian of every Cadet is required to provide him with an outfit as laid down in the Regulations for the time being in force. Certain additional uniform is required on being rated Midshipmen; and on promotion to the rank of Acting Sub-Lieutenant, the candidate is required to provide himself with the uniform of a commissioned officer. The total cost of the uniform will amount to £194 approximately, *viz.*, £64 on joining as Cadet, £50 for upkeep of uniform for the period of service as Midshipman, and £80 on promotion to the rank of Acting Sub-Lieutenant.

7. The parents or guardians of boys selected in India must provide European kit other than this uniform. An initial outlay of £100, of which £75 will be provided by Government, should be allowed on this account.

8. The estimated total expenses of parents or guardians and the normal cost to Government in connection with training in the United Kingdom may thus be summarised as follows :—

*Executive Officers.*

	European.		Indian.	
	Expenses of parent or guardian.	Normal cost to Government.	Expenses of parent or guardian.	Normal cost to Government.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pay as cadet (1 year) . . . . .	..	18 5 0	..	18 5 0
As Midshipman (2 years) . . . . .	..	182 10 0	..	182 10 0
As Acting-Sub-Lieutenant (approximately 9 months) . . . . .	..	105 0 0	..	105 0 0
Overseas pay—				
3 years as Cadet and Midshipman at £50 p. a. . . . .	..	..	..	150 0 0
9 months as Acting Sub-Lt. at £30 p. a. . . . .	..	..	..	22 10 0
European Kit Allowance (£100) . . . . .	..	..	25 0 0	75 0 0
Uniform :—				
Cost of uniform (1st year) . . . . .	64 0 0	..	64 0 0	..
Upkeep of uniform for the period of Midshipman's service and other incidental expenses (say) . . . . .	50 0 0	..	50 0 0	..
Cost of uniform on promotion to Acting Sub-Lieutenant (£80) . . . . .	5 0 0	75 0 0	5 0 0	75 0 0
Private allowance (1st year) . . . . .	36 0 0	..	36 0 0	..
Vacation expenses (optional but limited to £20 per annum for the first four years) . . . . .	80 0 0	..	80 0 0	..
Passage to U. K. (2nd class) . . . . .	..	..	..	50 0 0
Admiralty training charges . . . . .	..	590 0 0	..	590 0 0
<b>Total . . . . .</b>	<b>235 0 0</b>	<b>970 15 0</b>	<b>260 0 0</b>	<b>1,268 5 0</b>

*Engineer Officers.*

	European.		Indian.	
	Expenses of parent or guardian.	Normal cost to Government.	Expenses of parent or guardian.	Normal cost to Government.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pay as cadet (1 year) . . .	..	18 5 0	..	18 5 0
As Midshipman (2 years) . .	..	182 10 0	..	182 10 0
As Acting Sub-Lieut. (4 months) . . . . .	..	46 13 0	..	46 13 0
As Sub Lt. (E.) at 164.5 p.a. (1 year and 4 months) . .	..	219 0 0	..	219 0 0
Overseas pay—				
3 years as Cadet and midshipman at £50 p. a. . . . .	..	..	..	150 0 0
1 year 8 months as acting Sub-Lt. & Sub-Lt. (E) at £30 p. a. . . . .	..	..	..	50 0 0
European Kit Allowance (£100)	..	..	25 0 0	75 0 0
Uniform—				
Cost of uniform (1st year) . .	64 0 0	..	64 0 0	..
Upkeep of uniform for the period of Midshipman's service and other incidental expenses (say) . .	50 0 0	..	50 0 0	..
Cost of uniform on promotion to Acting Sub-Lt. (£80) . .	5 0 0	75 0 0	5 0 0	75 0 0
Private Allowance (1st year). .	36 0 0	..	36 0 0	..
Vacation expenses (optional but limited to £20 p. a. for the first four years) . .	80 0 0	..	80 0 0	..
Passage to U. K. (2nd class) . .	..	..	..	50 0 0
Allowance for Books and Instruments. . . . .	..	10 0 0	..	10 0 0
Admiralty training charges . .	..	1,385 0 0	..	1,385 0 0
Total . . . . .	235 0 0	1,936 8 0	260 0 0	2,261 8 0

## CHAPTER VIII.

## ADMISSION INTO THE ROYAL INDIAN NAVY.

1. On being appointed Sub-Lieutenant or Engineer Sub-Lieutenant, officers will be admitted to the Royal Indian Navy and will come under the ordinary regulations for that service.

2. Sub-Lieutenants and Engineer Sub-Lieutenants will be despatched to Bombay, at Government expense, under arrangements to be made by the Secretary, Military Department, India Office. On arrival they must report themselves immediately to the Flag Officer Commanding, Royal Indian Navy, Bombay, for orders.

3. The King's commission will be granted to British and Indian officers alike of both the Executive and Engineer Branches. The commissions will be issued by the Secretary of State for India and countersigned by His Majesty the King-Emperor.

4. As a condition of appointment European officers, on joining the service, are required to subscribe to the Indian Military Widows' and Orphans' Fund. Indian officers must become subscribers to the Defence Services Officers' Provident Fund.

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## CHAPTER IX.

Terms and conditions of service of commissioned officers of the Royal Indian Navy.

1. *Discipline.*—The personnel of the Royal Indian Navy will be governed by the Naval Discipline Act as modified by the Indian Navy (Discipline) Act, 1934 (XXXIV of 1934).

2. *Uniform.*—Officers of the Royal Indian Navy will wear uniform similar to that worn by the officers of the Royal Navy, with distinctive buttons bearing the Star of India as well as the Crown and Anchor.

3. *Pay of rank.*—The monthly rates of Indian pay of the various ranks of Indian officers are shown in Appendix V to these Regulations.

The grant of marriage allowance to a married officer is admissible only when he attains the age of 30 years.

A local allowance will also be admissible to—

- (a) Married officers of the rank or relative rank of Sub-Lieutenant and Lieutenant who are eligible for marriage allowance and who hold or officiate in naval shore appointments at Bombay Rs. 75 p. m.
- (b) Married officers of the rank or relative rank of sub-Lieutenant and Lieutenant serving in the afloat establishment and having then wives in Bombay, irrespective of whether they themselves are in Bombay or not. (The concession will not, however, be admissible in addition to shore allowance or to officers who are not eligible for the grant of marriage allowance)—Rs. 37-8-0.

4. *Allowances of officers holding afloat appointments.*—When serving afloat all officers of the Royal Indian Navy are entitled, in addition to their pay of rank, to free ration or an allowance in lieu thereof, as well as free lodging, service, fuel, light, etc., etc., and are required to mess in the ward room. While living on shore, they receive a shore allowance in lieu of messing allowance, lodging, service, etc., as admissible under the rules on the subject.

The following further allowances are admissible :—

- (a) Command pay to the executive officer in command of a ship.
- (b) An allowance to the executive officer of a ship.
- (c) Charge pay to the engineer officer in charge of the machinery of an escort vessel, " Investigator " and B. T. E.
- (d) Store account allowance to the officer keeping the Naval Store accounts of ships, Depot and B. T. E.
- (e) Survey allowances, etc., to Surveyor and Assistant Surveyors employed on survey vessel.

- (f) Allowances, command, executive and charge pay in addition to pay of rank, to executive and engineer officers of the Depot, Boys Training Establishment and "Pathan", Tender to "Dalhousie".

Per men-  
sem.

Rs.

*Depot—*

Captain . . . . . 300

*Executive officer (Second in Command)—*

If a Lt.-Commander . . . . . 60

If a Lieutenant . . . . . 30

Drafting officer . . . . . 100

Three officers appointed for duty in Navy office (each) . . . . . 75

Squadron Engineer Officer . . . . . 150

Engineer officer-in-Charge, Mechanical Training School . . . . . 100

*Boys' Training Establishment—*

Captain . . . . . 300

*Executive officer (Second in command)—*

If a Lt.-Commander . . . . . 60

If a Lieutenant . . . . . 30

*"Pathan" (Tender)—*

Commanding officer . . . . . 60

Engineer officer . . . . . 60

- (g) Pilotage fees to Commanding and Navigation officers of ships as admissible under the regulations on the subject.

- (h) Specialist allowances are also admissible to officers of the Royal Indian Navy who are qualified to perform certain specialist duties, e.g., Gunnery, Signalling and Navigation.

- (i) Duty allowance of Rs. 75 p.m. to the engineer officer appointed as 2nd Assistant to the Manager Engineering Department.

5. *Shore and port appointments.*—The shore appointments in the Royal Indian Navy and the port appointments under civil departments and the emoluments of these appointments are shown in the tables below. The opportunities for employment on the civil side may be reduced in the future.

## A—Naval Shore appointments.

Appointments.	Pay per mensem.	Staff pay per mensem.	Other allowances per mensem.	Nature of allowances.
	Rs.	Rs.	Rs.	
(a) Executive Branch.				
Flag Officer Commanding, Royal Indian Navy (a)	2,800 (consolidated)	..	500	Entertainment allowance.
Chief of Staff (a)	2,000 (consolidated)	..	..	
Captain Superintendent of the Dockyard (b)	Pay of rank .	400	..	
Commander of the Yard (b)	Pay of rank .	300	..	
Staff Officer (Operations) (b)	Pay of rank .	300* or 200†	..	
Staff Officer (Plans) (b)	Pay of rank .			
Staff Officer (Intelligence) (b)	Pay of rank .			
Staff Officer (Gunnery) (b)	Pay of rank .			
Staff Officer (Signals) (b)	Pay of rank .			
Divisional Sea Transport Officer (b)	Pay of rank .	400	..	
Two Assistant Sea Transport Officers, Bombay (b)	Pay of rank .	200 each	..	
Assistant Sea Transport Officer, Karachi (b)	Pay of rank .	200	..	
Registrar of Reserves	Pay of rank .	180	..	
Flag Lieutenant to the Flag Officer Commanding Royal Indian Navy (a)	Pay of rank .	150	..	
(b) Engineering Branch.				
Engineer Captain (b)	1,900 (consolidated)	..	..	
Manager, Engineering Department (b)	Pay of rank .	300	..	
1st Assistant to Manager, Engineering Department. (b)	Pay of rank .	150	..	

(a) Entitled to free quarters.

(b) Entitled to be housed by the State on payment of rent at 10 per cent. of salary.

\*If of Commander's rank.

†If of Lower rank.

*B.—Port appointments under civil departments.*

*Schedule showing the number and nature of posts in the Mercantile Marine Department and the consolidated rates of pay (excluding allowances) sanctioned for them in respect of the Royal Indian Navy transferred for service under the Department of Commerce.*

(a) POSTS FILLED BY EXECUTIVE OFFICERS.

Rank of Officer.	Consolidated rate of Pay.  Rs.
<i>I. Principal Officer, Mercantile Marine Department, Calcutta.</i>	
<i>Principal Officer, Mercantile Marine Department, Madras.</i>	
Captain . . . . .	1,770
Commander of 25 years' total approved service . . . . .	1,670
Commander of 20 years' total approved service . . . . .	1,570
Commander on promotion . . . . .	1,570
<i>II. Senior Nautical Surveyor, Mercantile Marine Department, Bombay.</i>	
<i>Nautical Surveyor, Mercantile Marine Department, Chittagong.</i>	
Captain . . . . .	1,520
Commander of 25 years' total approved service . . . . .	1,420
Commander of 20 years' total approved service . . . . .	1,320
Commander on promotion and Lieutenant-Commander of 8 years' seniority . . . . .	1,245
Lieutenant-Commander of six years' seniority . . . . .	1,220
Lieutenant-Commander of four years' seniority . . . . .	1,220
<i>III. Junior Nautical Surveyor, Mercantile Marine Department, Bombay.</i>	
<i>Nautical Surveyor, Mercantile Marine Department, Calcutta</i>	
Commander of 25 years' total approved service . . . . .	1,400
Commander of 20 years' total approved service . . . . .	1,300
Commander on promotion and Lieutenant-Commander of 8 years' seniority . . . . .	1,200
Lieutenant-Commander of six years' seniority . . . . .	1,125
Lieutenant-Commander of four years' seniority . . . . .	1,100
Lieutenant-Commander of two years' seniority . . . . .	1,075
<i>IV. Leave Reserve . . . . .</i>	<i>2, plus such additional number as may from time to time be required in view of Note 1 below.</i>

NOTE 1.—For so long as the posts of Nautical Adviser to the Government of India, Captain Superintendent of the "Dufferin", Port Officer, Aden and any new posts of a character analogous to those noted in this appendix are required to be filled by Royal Indian Navy officers, such will be filled by officers on List II.

NOTE 2.—The total cadre of List II, including its leave reserve, will be adjusted as may be necessary from time to time, in accordance with Note (1).

NOTE 3.—If and when the post of Principal Officer, Mercantile Marine Department Bombay, is filled by an Engineer Officer, the two posts for Executive Officers at that port will be designated Senior Nautical Surveyor and Junior Nautical Surveyor.

## (b) POSTS FILLED BY ENGINEER OFFICERS.

Rank of Officer.	Consolidated rate of Pay. Rs.
<b>I. Principal Officer, Mercantile Marine Department, Bombay.</b>	
Engineer Captain . . . . .	} 1,770
Engineer-Commander of 25 years' total approved service . . . . .	
Comander of 20 years' total approved service . . . . .	
Engineer-Commander on promotion . . . . .	
	1,670
	1,570
<b>II. Principal Officer, Mercantile Marine Department, Karachi.</b>	
<i>Principal Engineer and Ship Surveyor, Mercantile Marine Department, Bombay.</i>	
<i>Principal Engineer and ship Surveyor, Mercantile Marine Department, Calcutta.</i>	
Engineer-Commander of 25 years' total approved service . . . . .	1,600
Engineer-Commander of 20 years' total approved service . . . . .	1,500
Engineer-Commander on promotion . . . . .	1,400
Engineer-Lieutenant-Commander of four years' seniority . . . . .	1,350
<b>III. Second Engineer and Ship Surveyor, Mercantile Marine Department, Calcutta.</b>	
<i>Second Engineer and ship Surveyor, Mercantile Marine Department, Bombay.</i>	
<i>Engineer and Ship Surveyor, Mercantile Marine Department, Madras.</i>	
<i>Engineer and Ship Surveyor, Chittagong.</i>	
Engineer-Commander of 25 years' total approved service . . . . .	1,400
Engineer-Commander of 20 years' total approved service . . . . .	1,300
Engineer-Commander on promotion and Engineer-Lieutenant-Com- mander of 8 years' seniority . . . . .	1,200
Engineer-Lieutenant-Commander of four years' seniority . . . . .	1,150
Engineer-Lieutenant-Commander of two years' seniority . . . . .	1,125
<b>IV. Third Engineer and Ship Surveyor, Mercantile Marine Department, Calcutta.</b>	
<i>Fourth Engineer and Ship Surveyor, Mercantile Marine Department, Calcutta.</i>	
<i>Fifth Engineer and Ship Surveyor, Mercantile Marine Department, Calcutta.</i>	
<i>Third Engineer and Ship Surveyor, Mercantile Marine Department, Bombay.</i>	
<i>Fourth Engineer and Ship Surveyor, Mercantile Marine Department, Bombay.</i>	
Engineer-Commander of 20 years' total approved service . . . . .	1,250
Engineer-Commander on promotion and Engineer-Lieutenant-Com- mander of 8 years' seniority . . . . .	1,150
Engineer-Lieutenant-Commander of four years' seniority . . . . .	1,100
Engineer-Lieutenant-Commander of two years' seniority . . . . .	1,075
Engineer-Lieutenant-Commander on promotion . . . . .	1,050
Engineer-Lieutenant of six years' seniority . . . . .	950
Engineer-Lieutenant of four years' seniority . . . . .	900
Engineer-Lieutenant on promotion . . . . .	800
<b>V. Leave reserve . . . . . 4, plus such additional number as may from time to time be required in view of Note I below.</b>	

**NOTE 1.**—For so long as the post of Chief Surveyor to the Government of India and any new posts analogous to those noted in this appendix are required to be filled by Royal Indian Navy Officers, such will be filled by officers on List II.

**NOTE 2.**—The total cadre of List II, including its leave reserve, will be adjusted as may be necessary from time to time, in accordance with Note (1).

**NOTE 3.**—If and when the post of Principal Officer, Mercantile Marine Department, Bombay, is filled by an Engineer Officer, the post of Principal Engineer and Ship Surveyor at that port will cease.

## HOME DEPARTMENT.

Engineer and Harbour Master, Port Blair . . .	Pay. Basic pay of rank and Indian and Marriage allowances <i>plus</i> free quarters.
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NOTE 1.—Ordinary allowances, *e.g.*, travelling allowance, daily allowance, etc., of officers will be governed by the Fundamental Rules and the Supplementary Rules made thereunder. Existing special allowances, *e.g.*, motor car allowance, etc. sanctioned for the various appointments will continue, subject to the conditions under which they have been sanctioned.

NOTE 2.—The leave of officers under the Commerce Department will be regulated by the civil leave rules, while that of the Officer under the Home Department under the rules in R., R. I. N., Vol. I.

### 6. *Promotion and retirement of commissioned officers of the Royal Indian Navy.*

(Seagoing Branch).

#### 1. *Sub-Lieutenant to Lieutenant and Lieutenant-Commander Engineer Sub-Lieutenant to Engineer-Lieutenant and Engineer Lieutenant to Engineer-Lieutenant-Commander.*

- (i) To be promoted according to the rules at present in force regarding service in rank, certificate and examinations.
- (ii) To be retired at any time at Government's discretion if found physically unfit to serve.

#### 2. (a) *Lieutenant-Commander to Commander.*

- (i) Promotion to be by selection, after having served at least one year as Executive Officer afloat (second in Command).
- (ii) Selection to be made from Lieutenant Commanders of four years seniority and over, and to be based, all other things being equal, on seniority.
- (iii) To be retired at any time at Government's discretion if found physically unfit to serve.
- (iv) To be compulsorily retired at the age of 45.

#### (b) *Engineer-Lieutenant-Commander to Engineer-Commander.*

- (i) Promotion to be by selection, after having served at least one year as Engineer Officer in charge of the machinery of one of H. M. I. Ships.
- (ii) Selection to be made from Engineer-Lieutenant-Commanders of four years' seniority or over, and to be based, all other things being equal, on seniority.
- (iii) To be retired at any time at Government's discretion if found physically unfit to serve.
- (iv) To be compulsorily retired at the age of 45.

#### 3. (a) *Commander to Captain.—*

- (i) Promotion to be by selection, after having served at least two years in command afloat in the rank of Commander. It is to be regarded as desirable, but not absolutely essential, that the officer should have qualified at the Naval Staff College.

- (ii) To be retired at any time at Government's discretion if found physically unfit to serve.
- (iii) To be compulsorily retired at the age of 50.
- (b) *Engineer-Commander to Engineer-Captain.*
  - (i) Promotion to be by selection, after having served at least two years in an appointment usually held by an officer of the rank of Engineer-Commander.
  - (ii) To be retired at any time at Government's discretion if found physically unfit to serve.
  - (iii) To be compulsorily retired at the age of 50.
- 4. (a) *Captain.*
  - (i) To be retired at anytime if found physically unfit to serve.
  - (ii) To be compulsorily retired at the age of 55.
- (b) *Engineer-Captain.*
  - (i) To be retired at any time if found physically unfit to serve.
  - (ii) To be compulsorily retired at the age of 55.

NOTE 1.—The above rules may be relaxed at Government's discretion in particular cases of serving officers, who through no fault of their own do not conform to the above requirements. In particular, exceptions may be made to the compulsory retiring age in the case of existing Commanders promoted to that rank after the age of 40.

NOTE 2.—If any officer of less than 55 years of age retires he is liable, until he reaches that age, to recall for service under the Government of India in the event of an emergency.

7. Rules regarding leave, leave pay and duty pay out of India of Indian Officers are at present under consideration.

8. Retiring pensions of commissioned officers.

- (1) The minimum service required to qualify an officer for a retiring pension is 18 years' effective qualifying service.
- (2) Retiring pensions will consist of two parts, viz.:—
  - (I) Service Element.
  - (II) Rank Element.
- (3) (I) *Service Element*—

	£	s.
On completion of 18 years' qualifying service . . . . .	176	10
For each completed year of service after completing 18 years' qualifying service . . . . .	13	10
Maximum Service Element . . . . .	338	10

NOTE 1.—Qualifying service for pension will date from the date of first commission. Officers who receive their commission after 20 years of age will, however, be granted an antedate to that age for service element of pension.

NOTE 2.—The concession of antedate applies equally to officers in the service or under training on the 1st July 1936.

(II) *Rank Element*—

	£
Per annum.	
(a) For each completed year of service in the rank of Lieutenant-Commander or Engineer-Lieutenant-Commander after completing 18 years' service . . . . .	10
Maximum pension . . . . .	60

(b) For each completed year of service in the rank of Commander or Engineer-Commander after completing 18 years' service . . . . .	20
Maximum pension . . . . .	200
(c) For each completed year of service in the rank of Captain or Engineer Captain . . . . .	25
Maximum pension . . . . .	300

NOTE 1.—Antedate. The concession of antedate referred to in the notes under paragraph 3 above applies also in the calculation of the preliminary 18 years service referred to at (a) and (b) of this paragraph.

NOTE 2.—If an officer serves in two ranks in any year of service he will receive a proportion of the lower rate of rank element based on the number of completed months in the lower rank, his incremental date for rank element in the higher rank being the date of promotion to that rank.

(4) The pensions earned under clause (3) above are subject to the following maxima :—

	Service and rank elements £ per annum.
Commander and Engineer Commander . . . . .	538½
Captain and Engineer Captain . . . . .	630
Captain and Engineer Captain on completion of 32 years service . . . . .	630

(5) Lieutenant-Commanders, Commanders and Captains of both the Branches will be allowed to retire, at the discretion of the Government of India, at any time after attaining the age of 40. They will normally be placed on the retired list on attaining the maximum pension of their rank, but, if required to do so by the Government of India, may be retained on the active list until reaching the compulsory retiring ages of 45, 50 and 55, respectively.

(6) A Lieutenant-Commander and Engineer-Lieutenant-Commander, who is passed over for promotion and who serves to the retiring age of 45 years and is then compulsorily retired for reasons other than inefficiency or incapacity, will receive a gratuity of £800 in addition to his maximum rate of pension. An officer not attaining the compulsory retiring age of 45 years may be invited, at the discretion of the Government of India, to retire and permitted to draw the maximum pension of his rank and the gratuity of £800 provided that his retirement is in the interests of the service and not on account of inefficiency or incapacity.

(7) *Extra pension.*—Officers of the Royal Indian Navy who have held the appointment of Flag Officer Commanding, Royal Indian Navy, or Chief of Staff or Engineer Captain will receive, in addition to retiring pensions, extra pensions on the undermentioned scale :—

	£ per annum.
(i) For each completed year of service as Flag Officer Commanding, Royal Indian Navy . . . . .	44
Maximum extra pension . . . . .	175
(ii) For each completed year of service as Chief of Staff . . . . .	22
Maximum extra pension . . . . .	93
(iii) For each completed year of service as Engineer Captain . . . . .	22
Maximum extra pension . . . . .	83



The periods mentioned above are inclusive of leave admissible under the army staff leave rules.

Invalid and disability pensions and gratuities for officers and pensions and gratuities for their families are granted in certain cases of disabilities incurred in and by the service.

All pensions are convertible into rupees and may be drawn in India at the official rate of exchange.

An Officer is allowed to commute a portion of his pension, which commutation may take place on retirement, or at any time subsequent thereto.

9. *Gratuities*.—Officers of the Royal Indian Navy who are permitted to retire (or resign) after completing 10 years' service but with less than 18 years' service will receive gratuities at the following scale :—

						£
Between	10—11 years' service	.	.	.	.	1,000
"	11—12 "	"	"	.	.	1,100
"	12—13 "	"	"	.	.	1,200
"	13—14 "	"	"	.	.	1,300
"	14—15 "	"	"	.	.	1,400
"	15—16 "	"	"	.	.	1,500
"	16—17 "	"	"	.	.	1,600
"	17—18 "	"	"	.	.	1,700

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**APPENDICES.**

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## APPENDIX I.

## PHYSICAL REQUIREMENTS FOR CANDIDATES FOR THE ROYAL INDIAN NAVY.

[Referred to in paragraph 2 of Chapter III and paragraphs 6 and 16 of Chapter (IV.).]

With a view to preventing candidates who may be physically unfit for His Majesty's Service from incurring the inconvenience and expense of preparing for commissions in the Royal Indian Navy, it is suggested that they undergo examination by the medical adviser of the family, or any other qualified medical practitioner, to whom the following list of defects which cause rejection may be submitted for guidance.

It is to be understood that this private examination is merely suggested as a guide for intending candidates and to lessen the chances of disappointment, and that it is by no means intended to take the place of, or to influence in any way, the regular Official Physical Examination.

1. A weak constitution, imperfect development, physical weakness, either hereditary, or from chronic disease, wounds or injuries.

2. Skin disease, unless temporary or trivial.

3. Malformation of the head, deformity from fracture or depression of the bones of the skull, impaired intellect, epilepsy, paralysis, or impediment of speech.

4. Defective vision, squint, imperfect perception of colours, fistula lachrymalis, or any chronic disease of the eyes or eyelids. The standard of distant vision on entry is—one eye 6/6 and the other not less than 6/12 without glasses. The defect must be due to refractive errors. For near vision they must be able to read D=0.6 without glasses with each eye. A high degree of hypermetropia will disqualify.

Officers may be accepted for the Engineer Branch, if their eyesight is not below 6/9 in one eye and 6/12 in the other.

5. Impaired hearing, or discharge from one or both ears, or any disease of the external middle, or internal ear.

6. Disease of the bones of the nose, or of its cartilages, nasal polypus, or disease of the nasopharynx.

7. Disease of the throat, tongue, palate, or tonsils; many unsound or functionless teeth\*, unhealthy gums, disease of the glands of the throat or neck, external cicatrices, if at all extensive and especially if adherent.

8. Functional or organic disease of the heart or blood vessels, deformity or contraction of the chest, or any symptoms of lung disease or tendency thereto.

9. Undue swelling or distension of the abdomen, obesity, disease or enlargement of the abdominal organs. Rupture, weakness or distension of the abdominal rings; any disease of the bladder or incontinence of urine.

10. The existence of any serious defect of the genital organs, or of varicocele, when it clearly forms or is likely to form a serious impediment to the efficient performance of duty, e.g., when it is associated with varicose veins or piles.

11. Paralysis, weakness, impaired motion, or deformity of the upper or lower extremities, from whatever cause; a varicose state of the veins, especially of the leg, bunions distortion or malformation of the hands, feet, fingers or toes.

12. Distortion of the spine, of the bones of the chest, or pelvis, from injury or constitutional defect.

13. No person will be admitted to the Royal Indian Navy unless he has been vaccinated or re-vaccinated during the last five years.

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\* i.e., 10 defective or deficient teeth in persons above the age of 17—a tooth being considered as defective when it cannot be made permanently serviceable by dental repair. Candidates must, however, possess some sound opposing molars and incisors. The numbers given above are intended as a general guide, and are not necessarily strictly adhered to, provided the general condition of teeth is good.

14. Correlation of age, height and chest girth will not be less than that given in the following table :—

*Physical Equivalents.*

Age last birth-day.	Height without shoes.	Chest.	
		Girth when fully expanded.	Range of expansion not less than
	Inches.	Inches.	Inches.
16	60 and under 62 . . . . .	32½	2
	62 and under 65 . . . . .	33½	2
	65 and under 68 . . . . .	33½	2
	68 and under 72 . . . . .	34	2
	72 and upwards . . . . .	34½	2
17	62 and under 65 . . . . .	33½	2
	65 and under 68 . . . . .	34	2
	68 and under 72 . . . . .	34½	2
	72 and upwards . . . . .	35	2
18	62 and under 65 . . . . .	34	2
	65 and under 68 . . . . .	34½	2
	68 and under 72 . . . . .	35	2
	72 and upwards . . . . .	35½	2
19	62½ and under 65 . . . . .	34½	2
	65 and under 68 . . . . .	34½	2
	68 and under 70 . . . . .	35	2
	70 and under 72 . . . . .	35½	2
	72 and upwards . . . . .	36	2
20	62½ and under 65 . . . . .	34½	2
	65 and under 68 . . . . .	34½	2
	68 and under 70 . . . . .	35	2
	70 and under 72 . . . . .	35½	2
	72 and upwards . . . . .	36	2

Chest.

Age last birth-day. than	Height without shoes.	Girth when fully expanded.	Range of expansion not less than
	Inches	Inches.	Inches.
21 and upwards.	62½ and under 65 . . . . .	34½	2
	65 and under 68 . . . . .	35	2
	68 and under 70 . . . . .	35½	2
	70 and under 72 . . . . .	36	2
	72 and upwards . . . . .	36½	2

15. The candidate's height will be measured as follows :—He will be placed against the standard with his feet together, and the weight thrown on the heels and not on the toes or outer-sides of the feet. He will stand erect without rigidity, and with the heels, calves, buttocks and shoulders touching the standard ; the chin will be depressed to bring the vertex of the head level under the horizontal bar, and the height will be recorded in inches and parts of an inch to quarters.

16. The candidate's chest will be measured as follows :—He will be made to stand erect with his feet together, and to raise his arms over his head. The tape will be so adjusted round the chest that its upper edge touches the inferior angles of the shoulder-blades behind, and its lower edge the upper part of the nipples in front. The arms will then be lowered to hang loosely by the side, and care will be taken that the shoulders are not thrown upwards or backwards so as to displace the tape. The candidate will then be directed to take a deep inspiration several times, and the maximum expansion of the chest will be carefully noted.

The minimum and maximum will then be recorded thus in inches, 33/35, 34/36½, etc.

In recording the measurements, fractions of less than half an inch should not be noted.

## APPENDIX II.

## SYLLABUS OF SUBJECTS OF EXAMINATION TO BE HELD IN INDIA.

(Referred to in paragraph 15 of Chapter IV.)

1. *Interview and Record.*—The object of the interview is to ascertain whether the candidate is suitable in respect of personality and other matters for the position of a commissioned officer in the Royal Indian Navy.

2. *English.*—The questions will be designed to test the candidate's understanding and command of the language. A passage will usually be set for summary of precis.

3. *General Knowledge.*—The questions will be designed to test the candidate's knowledge of and interest in current events and in such other subjects as should be within the knowledge of Indian candidates of the prescribed age. The paper may include a general question or questions on literature.

4. (a) *Geography.*—The general and political geography of the world. One half of the will be on general elementary geography and the other half on imperial geography. A special knowledge of India and neighbouring countries will be expected. Questions on physical and economic geography may be set. The paper will not be of an advanced character.

(b) *French.*—Translation from French into English and from English into French ; free composition ; oral conversation. 225 marks are allotted to the paper or papers on this subject and 75 marks for oral conversation.

(c) *German.*—As for French. German should be written in German characters.

(d) *English History from 1485.*—British History, including British Colonial History, and European History as affecting British History.

Although a fixed date is given for the beginning of the period, candidates will be expected to know in general outline how the initial position was reached. Such knowledge of geography as is necessary to make the history comprehensible will be required.

(e) *Indian History with special reference to the history of India from 1526 onwards.*—The paper will deal with great men and great events, great changes and great movements, and the broad features of general life in the history of India.

*Mathematics.*—Credit will be given for the clearness and aptness of the language of the answers ; deductions will be made for obscurity or slovenliness, and especially for bad grammar and the incorrect use of words or phrases.

The use of mathematical symbols and of well-established abbreviations like lb. and cm. is permissible ; a calculation can often be exhibited quite clearly without the use of words, and a tabular form is often appropriate ; but incomplete sentences such as are customary in telegrams will involve loss of marks.

5. *Lower Mathematics :—Arithmetic.*—Arithmetic, including simple methods of dealing with statistical data.

The mensuration of plane areas and simple solid bodies. The use of callipers, vernier and other simple measuring instruments. The determination of area, volume and density by displacement, by weighing, etc.

*Geometry.*—The substance of Euclid's six books. Elementary ideas in solid geometry treated informally : straight lines, planes, rectangular blocks, wedges, pyramids, cylinders, cones and spheres. The construction of plans and elevations.

*Algebra.*—Formulas, their evaluation and transformation, the notion of a function rate of change. The gradient and area of a graph. The solution of equations, linear and quadratic, simple and simultaneous. The use of logarithms ; the measuring and simplest properties of negative and fractional indices. Arithmetical and finite geometrical sequences.

*Trigonometry.*—Solution of plane triangles, graphs of trigonometrical functions ; use of four-figure tables ; additional theorems.

*Mechanics.*—The lever, the inclined plane, the pulley, the balances and other simple machines ; the composition and resolution of forces in one plane ; moments ; simple graphical methods ; simple cases of equilibrium ; properties of the centre of gravity ; velocity ratio, mechanical advantage, and efficiency of a machine.

The composition and resolution of velocities and acceleration in one plane ; rectilinear motion under uniform acceleration ; the conservation of linear momentum ; work, energy and power ; graphical treatment of varying velocities, accelerations and forces.

Proofs of the parallelogram and triangle of forces, and of the principle of moments will not be asked for.

*General.*—In the absence of special instructions that a question is to be answered by a particular method, candidates are at liberty to choose their method from any branch of mathematics.

#### 6. *Physics* :

*General.*—Principles of measurement. Solids, liquids and gases.

*Hydrostatics.*—Fluid pressure, the Brahma press, floating bodies. Simple methods for the determination of the specific gravity of solids and liquids. Gaseous pressure. Boyle's Law. Charles's Law. Atmospheric pressure. The mercury barometer. Air and water pumps. The syphon.

*Heat.*—Temperature, Thermometers, mercury, alcohol, maximum and minimum, clinical. Specific heat of solids and liquids; latent heat of fusion and vaporisation; Expansion of solids, liquids and gases. Measurement and simple application of these. Convection, conduction and radiation; application to heating and ventilating. Evaporation, distillation; humidity, fog and cloud. Heat considered as energy; mechanical equivalent of heat.

*Optics.*—Rectilinear propagation of light. Reflexion and refraction of light. Photometry. Plane and spherical mirrors. Refractive index. Prisms and lenses; the formation of images. Construction of simple telescopes and microscopes. The eye; spectacles. Dispersion; colour.

*Magnetism.*—Properties of a magnet. Making of a magnet. Lines of magnetic force. Mariner's compass.

*Electricity.*—The fundamental ideas concerning electric currents, difference of potential; resistance; construction and mode of action of the commoner primary cells. The fundamental laws of electrolysis and their application in electro-plating. Heating effect of a current; its application in incandescent and arc lamps, electric welding, cooking. The phenomena of permanent and induced magnetism in iron; fields of magnetic force; the magnetic field associated with an electric current. The construction and action of an electro-magnet; application in electric bells, the telegraph and telephones. The simpler phenomena of electro-magnetic induction; application to the induction coil, Ohm's Law. The simpler methods of measuring electric current, difference of potential and resistance; practical definitions of the ampere, volt, Ohm, Joule and Watt. Construction and mode of action of simple measuring instruments. The simple galvanometer, ammeter, voltmeter.

#### 7. *Chemistry* :

*General.*—Definition of common terms such as deliquescence, efflorescence sublimation, etc. Description of common operations such as filtration, distillation, crystallisation, etc. Atoms and molecules. Elements and compounds. Physical and chemical changes. Mixture and simple methods of separation.

Application of Boyle's and Charles's Law. Avogadro's Law. Laws of chemical combination. Simple ideas of valency. Outlines of the properties of solutions. Heat of reaction. Simple chemical equations. Equivalent weights and their determination. Atomic and molecular weights. Simple numerical examples.

*Inorganic.*—The chemical properties of hydrogen, oxygen, nitrogen, chlorine, carbon, sulphur, phosphorus, and their commoner compounds. Hard and soft water.

The general characteristics and behaviour of the metals, aluminium, calcium, copper, iron, lead, mercury, sodium, tin, zinc and a knowledge of their carbonates, chlorates, oxides, nitrates, sulphates.

The manufacture (without technical details) and uses of commercial oxygen-soda (carbonate), sulphuric acid, iron, aluminium, nitric acid, white lead.

*Organic.*—The preparation and properties and reactions of methane, ethane, ethylene, acetylene. Ethyl alcohol, ether, acetaldehyde, acetic acid, acetone and ethyl acetate. Coal gas and coal tar. An elementary knowledge of the properties of benzene and its simpler derivatives.

The part played by carbon compounds in the life of animals and plants: fats, soap, starch, glucose and cane sugar; treated descriptively.

Coal, petrol, kerosene and lubricating oils. Carbon compounds as sources of energy.

A choice of questions will be given so that full marks may be scored without a knowledge of organic chemistry.

*Optional.*

8. *Freehand Drawing*.—There will be two tests in drawing. (i) In the first a photograph or other representation of a landscape will be set before the candidate, who will be required to make an outline sketch of it in the style of a military panorama. The drawing should be in black and white and should show with a few lines all the important features of the landscape, so that officers using the sketch in action should be able to grasp the nature of the position and rapidly identify its landmarks. Correct proportions are essential. A conventional form of shading with oblique parallel lines may be used; but this must be strictly confined to parts of the sketch where such definition is helpful to the clearness of the whole. Candidates are advised to practise drawing the simple crest lines of actual landscapes.

Manual of Map Reading, Photo Reading and Field Sketching, 1929, articles 70, 73, 74 and 76 should be consulted. This book can be purchased from the Manager of Publications, Delhi. (Price 2-4-0).

(ii) In the second test candidates will be asked to draw from memory some common object, such as a chair or a saddle.

9. *Geometrical Drawing*.—The neat and accurate use of the pencil, ruling pen, compass, scales, protractor, set squares. The application of geometrical drawing to simple problems in plain geometry.

The construction of ordinary and diagonal scales. The setting out of words in good lettering.



## APPENDIX III.

LIST OF ARTICLES REQUIRED BY CADETS ON JOINING THE BOY'S TRAINING ESTABLISHMENT.  
(Referred to in paragraph 1 of Chapter VII.)

## UNIFORM.

(To be purchased from the authorised tailor.)

Articles.	No.
Undress Coat . . . . .	1
Tunic white . . . . .	4
Trousers white . . . . .	4
Cap uniform . . . . .	1
Cap covers (white) . . . . .	2
Badge . . . . .	1
Buttons uniform . . . . .	As required.
Helmet . . . . .	1
Shorts game . . . . .	2 pairs
Shirts, Game . . . . .	2
Shorts white . . . . .	6
Stockings black . . . . .	4 pairs
Stockings, Game . . . . .	2 pairs
Socks cotton black . . . . .	4 pairs
Shoes black uniform . . . . .	1 pair
Shoes white uniform . . . . .	1 pair
Boiler suits . . . . .	2

*Additional—may be purchased locally.*

Shirts soft white (without collars) . . . . .	2
Shirts soft white (Tennis) . . . . .	6
Belt (white plain) . . . . .	1
Sleeping suits . . . . .	4
Ties uniform . . . . .	2
Handkerchiefs . . . . .	8
Gymnastic shoes . . . . .	1 pair
Football boots . . . . .	1 pair
Bathing suit . . . . .	1
Sheets single . . . . .	4
Blanket or rug . . . . .	1
Pillow slips . . . . .	4
Towels . . . . .	6
Table Napkins . . . . .	4
Hair Brush . . . . .	1
Comb . . . . .	1
Tooth brush . . . . .	1
Grey or white flannel trousers . . . . .	1 pair (optional)
Jersey . . . . .	1 (optional)
Singlets cotton . . . . .	4
Scarf white . . . . .	1

## BOOK .

- 1 copy of Inman's Nautical Tables.  
1 copy of Admiralty Manual of Navigation—Vols. I and II.  
1 copy of Admiralty Manual of Seamanship—Vols. I and II.

## APPENDIX IV.

The special competitive examination for candidates from the I. M. M. T. S, "Dufferin" desiring admission to the commissioned ranks of the Royal Indian Navy, will be held at Bombay not later than October. The examination will be conducted by the Federal Public Service Commission (India) in accordance with the following rules:—

1. The examination will consist of two parts, an interview by a Board and a written examination.

2. Candidates must have completed five terms in the "Dufferin" at the time of the written examination and be more than 16 years 6 months, but not more than 19 years of age on the 1st January of the year subsequent to the examination.

3. Candidates must be unmarried. A cadet or apprentice who marries while under training will be discharged.

4. A candidate must be either—

(a) a British subject of Indian domicile whose father (if alive) is a British subject or a subject of a State in India, or a British protected person of the tribal areas; or (if dead) was at the time of his death either a British subject or a subject of a State in India or a British protected person of the tribal areas, or a person in the permanent service of the Crown or a person who had retired from that Service;

(b) A Ruler or a subject of a State in India or a British protected person of the tribal areas.

Provided that in the case of a British subject the requirements of this rule may be waived by the Secretary of State in Council if he is satisfied that their observance would occasion exceptional hardship, and that the candidate is so closely connected by ancestry and upbringing with His Majesty's dominions as to justify special treatment.

5. Candidates cannot be admitted to the examination unless they have been recommended by the Captain Superintendent of the Indian Mercantile Marine Training Ship "Dufferin" as being, in his opinion, suitable for commissioned rank in the Royal Indian Navy. Parents or guardians of candidates must undertake for them that they are prepared to be trained as executive or engineer officers according to the exigencies of the service.

6. The examination will include the following subjects and the maximum number of marks obtainable for each subject is as follows:—

	Maximum marks.
Interview and Record Board . . . . .	500
Mathematics (1) . . . . .	250
Mathematics (2) . . . . .	200
English . . . . .	200
History . . . . .	125
Geography . . . . .	125
General Science . . . . .	250
Electricity and Mechanics . . . . .	200
Navigation . . . . .	250

The papers will be based on the curriculum which the candidates have studied in the "Dufferin".

7. The Interview and Record Test will be held at the Navy Office, Bombay, and will be conducted by a Board consisting of a Member of the Federal Public Service Commission (nominated by the Commission) as Chairman, two officers of the Royal Indian Navy and one non-official gentleman to be nominated by the Government of India.

8. Each candidate permitted to appear at the examination must pay a fee of Rs. 50. No claim for a refund of this fee will be entertained.

9. From the marks assigned to a candidate in each subject such deduction will be made as the Federal Public Service Commission may consider necessary in order to secure that no credit is allowed for merely superficial knowledge.

10. If a candidate's handwriting is not easily legible, a deduction, which may be of considerable amount, will be made on this account from the total marks otherwise accruing to him.

11. No candidate, whatever his position may be in the order of merit, will be declared successful unless he obtains at least 40 per cent. marks for the Interview and Record test 50 per cent. marks in Mathematics (1) and 50 per cent. of the maximum aggregate of marks in the written examination.

12. (a) Candidates who obtain the minimum marks prescribed by rule 11 will be required to complete their training in the "Dufferin" and must pass the Final Passing Out examination of the ship.

(b) They will also be required to pass a medical examination as to their physical fitness for service in the Royal Indian Navy. The details of the physical requirements are contained in Appendix I to the "Regulations respecting the recruitment, training, rates of pay, etc., etc., of commissioned officers of the Royal Indian Navy." This examination will be held after the results of the competitive examination are known. Those candidates who fail to pass the medical examination will not be accepted as cadets for the Royal Indian Navy.

13. According to the number of vacancies available, a nomination, or nominations, for Royal Indian Navy cadetships and/or apprenticeships will be allotted by the Government of India, Defence Department Navy Branch, to the best candidate, or candidates, in order of merit as shown on the combined total of marks awarded by the Interview and Record Board and obtained at the written examination, provided that no candidate who subsequently fails to pass the Final Passing Out examination of the "Dufferin" will be selected as a cadet or apprentice on the result of the competitive examination.

14. All travelling and other expenses in connection with candidates' attendance before the Interview and Record Board, the written examination and the medical examination must be borne by the candidates themselves.

15. Candidates selected for training as commissioned officers of the Royal Indian Navy will be required to proceed for training to England in accordance with the "Regulations respecting the recruitment, training, rates of pay, etc., etc., of commissioned officers of the Royal Indian Navy" except so far as these regulations are modified by the present rules.

16. Candidates selected for the executive branch will be sent to England to join H. M. S. "Excellent" and "Vindictive" in the following January for a period of training of not less than three terms. Short leave to visit their parents or guardians prior to leaving India may be granted at the discretion of the authorities.

17. Candidates selected for the engineer branch will be sent to England for training as soon as the necessary arrangements can be made.

18. The Government of India reserve the right of amending these rules from time to time as may be found necessary.

# APPENDIX V.

(Referred to in para. 3 of Chapter IX.)

Pay of rank—Indian officers.

TOTAL.

Rank.	Basic pay.		Marriage allowances.*	Single.		Married.
	Executive.	Engineer.		Executive.	Engineer.	Executive.
	Rs. p.m.	Rs. p.m.	Rs. p.m.	Rs. p.m.	Rs. p.m.	Rs. p.m.
Sub-Lieut. and Eng. Sub-Lt. without certificate	250	250	75	250	250	325
Eng. Sub-Lt. with certificate	..	300	75	..	300	375
Lieutenant on promotion	300	350	75	300	350	425
Do. of 2 years' seniority	350	400	75	350	400	475
Do. " 4 "	400	450	75	400	450	525
Do. " 6 "	450	500	75	450	500	575
Lieut.-Comdr.	550	600	100	550	600	700
Do. of 2 years' seniority	575	625	100	575	625	725
Do. " 4 "	600	650	100	600	650	750
Do. " 6 "	650	675	100	650	675	775
Do. " 8 "	700	725	100	700	725	825
Commander on promotion	800	800	100	800	800	900
Do. of 25 years' seniority	900	900	100	900	900	1,000
Captain	1,050	1,050	150	1,050	1,050	1,200

\*Admissible only on attaining the age of 30 years.



**Report on the working of the Indian Library Association for the period from 1st April, 1940 to 31st March, 1942 :—**

*Period.*—As usual, this report covers the period intervening the two General meetings, viz., the one held in Patna about the middle of April, 1940 and the other to be held in Bombay in the first week of April next. Or, in other words it dates from the 1st of April, 1940 to the 31st of March, 1942.

*Membership.*—At the beginning of the period under review, the strength of the Association stood at 79, but, at the end of March 1942, it was 103, or there was an increase of 24. Analysed, these figures show that in all, eleven ceased to be members, for two resigned, and two (one life-member) died, while the names of five had to be removed for non-payment of their dues, out of the Individual members. The Lucknow University library and the Madras Library Association resigned their membership. Both, however, have agreed to rejoin from April, 1942.

Coming to the additions, it is found that 13 persons joined as individual members, while eighteen libraries enlisted as such. Four Library Associations (the Maharashtra, the Andhra Desa, Delhi and Assam Provincial) got themselves affiliated to the Indian Association, during the period under review.

A list of the members of the Association as it stood at the end of March 1942 is given as Appendix I, and the table below will show at a glance the variations during the period under report :

Period ending.	Individual members.	Life members.	Libraries.	Affiliated Associations.	Total.
31st March, 1940.	55	4	15	5	79
31st March, 1942.	60	8	32	8	103
Variation ...	+5	—1	+17	+3	+24

Among the casualties are to be recorded with much regret the deaths of two of our old members and of Mr. R. Manchanda representative of Punjab Library Association. One is that of the late Mr. Labhu Ram, Librarian of the Punjab University Library, who was a foundation member of the Association and had been its Vice-President for a number of years, and was a tower of strength to the Association. His death is not only a great loss to this Association, but to the entire profession.

The second death is that of Professor Harekrishna Das of Ravenshaw College, Cuttack. The late Professor, although did not belong to the profession, but his zeal for the library movement was evident from the fact that he joined the Association as a Life Member, soon after it was founded. Our heartfelt sympathies go to the bereaved families.

Mr. R. Manchanda was the Librarian of the Hailey College of Commerce, and represented the Punjab Library Association on the Indian Association. He was associated with the Indian Association from its very start, having come from Lahore several months in advance of the holding of the First Library Conference held in Calcutta, and helped in the arrangements for the conference and the founding of the Association. He always took a very keen interest in all matters pertaining to librarians and librarianship. His premature death is a great loss to us all.

### THE THIRD GENERAL MEETING.

The Third Statutory General Meeting of the Association was held in Patna on the occasion of the Fourth Library Conference, on the 15th April, 1940, at 3 p.m. in the Patna University Library, with the late Mr. Labhu Ram (Vice-President) in the Chair. Twenty-seven members attended in person, while 19 were represented by proxies.

The business transacted at the meeting was the adoption of the Report on the working of the Association for the period October, 1937 to March, 1940, and of the audited accounts for the two years 1937-38 and 1938-39.

Besides, certain modifications relating to the number of members of the Council were made in the Rules and regulations which were a sequel to the changes made in the previous year.

The election of office-bearers and members of the Council followed the said items and a list of those elected as such, at the meeting, is given as Appendix II.

## THE COUNCIL.

Two meetings of the Council were held as usual on the occasion of the Fourth Library Conference, in Patna, on the 12th and the 15th April, 1940, in the University Library building.

Apart from routine matters, *e.g.*, the adoption of the Report on the working of the Association and the audited accounts, etc., the reports of various Sub-Committees appointed by the Council were considered. Besides this, the general revision of the constitution of the Association and the bringing out of another edition of the Directory were decided upon. Another proposal, *viz.*, to establish better relations between the Affiliated Associations and the Indian Library Association, was adopted. Another important Committee appointed was that for drawing up an exhaustive scheme for library training. Details of the activities of these Committees will be explained in their proper place in this Report.

Among the Council members there occurred four vacancies during the period under review, due to the deaths of the late Mr. Labhu Ram and Mr. R. C. Mandhanda, the representative of the Punjab Library Association. The other two occurred owing to the non-acceptance of membership by Rao Sahib S. R. Ranganathan, and the representative of the Madras Library Association. These places were filled by Rai Sahib I. N. Sinha, Librarian, Sinha Library, Patna ; Dr. Wali Mohammad of Lucknow University and a former President of the Association ; and the representatives of Delhi and of the Andhra Desa Library Associations.

## The Executive Committee.

Besides the Chairman and the Deputy Chairman of the Council and the Treasurer and the Honorary Secretary, who are all ex-officio members of this Committee, it included Dr. N. Ray, Mr. S. Chatterji and Mr. Labhu Ram. On the death of the last named, Mr. S. S. Saith was elected to fill the vacancy.

The attendance at the meetings was very satisfactory, which enabled the work being done regularly. In all, ten meetings of the Committee were held during the period under report, and 57 items were disposed of. In the meeting held on the 21st November 1941, Mr. John Sargent, the President and Dr. P. M. Joshi, a Vice President of the Association, who happened to be present in Calcutta at the time attended, by special invitation.



## The Directory of Indian Libraries.

In the last Report, it was stated that the question of the publication of another edition of the Directory was under consideration. The matter was actually taken up at the Council meeting held in Patna on the 12th April, 1940, when after a good deal of discussion it was decided that a revised edition of the Directory should be brought out, and a Committee consisting of the undermentioned gentlemen was appointed to see to it.

Mr. R. Gopalan.  
Mr. Sant Ram Bhatia.  
Rai Mathura Prasad.  
Mr. Y. M. Mulay.  
Mr. S. Bashir-ud-din.  
Sardar Sohan Singh.

The Executive Committee when implementing this decision of the Council thought it advisable to expand this Committee by including representatives from each province or area, so as to facilitate the collection of material. The Executive Committee also appointed Messrs. Sohan Singh and Y. M. Mulay as Joint Honorary Editors of the Directory, and in consultation with the Editors enlarged the said Committee as shown in Appendix III of this Report. An exhaustive questionnaire was drawn up, which after certain modifications by the Executive Committee was issued about the end of March, 1941 for collecting the information.

The whole country was divided into two parts, one in charge of each Editor, and about 1500 copies of the questionnaire were sent out. It was also translated into Gujrati, through the courtesy of Mr. T. D. Waknis, in order to facilitate the collection of the required information from Gujrat. From the reports received upto the end of 1941, it appeared that good progress had been made in the Southern and Western parts of the country which were in charge of Mr. Mulay, while the same was not the case with Upper India. It will thus take a little more time to gather the required information from the rest of the collaborators, but every endeavour is being made to bring out the second edition of the Directory as soon as possible.

## TRAINING IN LIBRARIANSHIP.

On the occasion of the Delhi Conference in 1937, another Committee was appointed to go through the whole question of training as imparted at various centres in India, but this Committee could not

produce any result due to its inability to meet. The matter was therefore referred to the Council of the Association in its Patna meeting on the 12th April, 1940, when a Special Committee was appointed with instructions to present a skeleton scheme before the Patna session was over. This was possible to do and after considering this skeleton scheme the Committee consisting of Dr. P. M. Joshi, Dr. N. Ray, Mr. S. S. Saith, and Khan Bahadur K. M. Asadullah was directed to work out the details and get the approval of the Council, in circulation. This scheme (reproduced as Appendix IV) laid down the syllabus etc. along with lists of books recommended for study. It suggested two courses, one for the Diploma and the other for a Certificate. The first was intended to impart higher training and was to be of one year's duration, and to this course, only graduates were to be admitted. The other course was intended to train assistants etc. and it was to be open to either Matrics or those who had passed the Intermediate. The duration of this was to be four months.

The scheme after having received the approval of the Council was circulated among the members of the Association for their information.

In October, 1941, it was referred to the Inter-University Board for being considered at their next meeting to be held in January 1942, at Annamalainagar, in order to be recommended by that body for adoption by the Universities which were imparting training or intended to start Training classes, with a view to having a uniform standard and system in this behalf. The reply from the Board is still being awaited, although from press reports, it appears that our request has been acceded to.

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#### **Inclusion of a short course of Librarianship in the curriculum of Teachers' Training Institutions :**

The Educational authorities of Assam continued to take advantage of the offer of the Association in this behalf; and at the request of the Director of Public Instruction, Assam, the services of trained librarians (Mr. S. S. Saith, and Mr. W. N. David) were placed at his disposal both in the beginning of January 1941 and 1942 for a period of about a fortnight on each occasion to deliver lectures to the students of the B.T. class of the St. Edmunds College, Shillong. The expense was borne by the authorities in Assam.

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## UNION CATALOGUE OF SCIENTIFIC PERIODICALS.

The progress in the compilation of this catalogue has not been what it should have been, during the period of report. The Editor was too busy both officially and otherwise to devote more time, and after he had finished the preliminary editing and had given shape to the material collected, certain discrepancies were again found in the lists supplied by various libraries. These had to be referred back to them for clarification, about April, last year. All replies were not received, and the Editor had on appointment as Librarian of the Punjab University Library to proceed to Lahore, where he has been so busy with his official affairs that he could not find time to send even a report upon the progress made by him for inclusion in this Report.

An expense of another Rs. 200 was incurred in this connection, leaving a balance of Rs. 1,825 only in hand.

## EXPANSION OF THE TOPICS OF DEWEY DECIMAL CLASSIFICATION, PERTAINING TO INDIA :

At the Council meeting held in Patna, the Dewey Expansion Committee in presenting their brief report represented that their Convener Mr. Mohamad Shafi was not in a position to complete the work assigned to them due to his failing health. The resignation was accepted regretfully, but the Council recorded their appreciation of the useful and arduous work done by the outgoing Committee. On examining the report submitted by the said Committee, the stage at which the work was left was somewhat as follows :

### List of expansions worked out :

Mr. Prabhat Mookerji	181.4	Ancient Indian Philosophy.
Do.	294	Indian Religions.
	294.1	Vedic Religion (General).
	294.3	Buddhism.
	294.5	Brahmanism and later Hinduism.
	294.6	Sikhism.
Mr. K. M. Asadullah	295	Parseeism.
Do.	297	Islam.
	491.2	Sanskrit language.
	491.4	Modern Indian languages.
	491.55	Modern Persian language.
	492.7	Arabic language.
	494.8	Dravido-Munda languages.
	495	Asiatic languages.

**List of expansions worked out.—concl'd.**

Dr. N. Ray	722.4	Ancient Indian Architecture.
	891.2	Sanskrit literature.
	891.48	Urdu literature.
Dr. N. Ray	954	History of India.

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**List of items to be worked out :**

181.5	Iranian Philosophers.
189.3	Arabian Philosophers.
294.4	Jainism.
342.54	Indian constitution.
349.54	Indian Law.
354.54	Indian administration and organisation (Central).
491.5	Iranian language.
495.5	Himalayan languages.
495.8	Burmese language.
723.4	Medieval Mohammadan architecture.
737	Numismatics.
759.94	Indian schools of painting.
780.954	Indian music.
892.7	Arabic literature.
894.8	Dravidian literature.
895.5	Himalayan literature.
895.8	Burmese literature.
913.3	Indian antiquities.
959.1	Burmese history.

Out of those worked out, the undermentioned topics had been re-examined with the help of certain experts and tentative schemes had been prepared :

181.4	Indian Philosophy.
294	Indian religions, including—
294.1	Vedic religion.
.3	Buddhism.
.5	Brahmanism and later Hinduism.
.6	Sikhism.
295	Parseeism.
297	Islam.
491.2	Sanskrit language.
.4	Modern Indian languages.
891.2	Sanskrit literature.
954	Indian History.

The Committee also recommended certain expansions of 800 and of 700 as far as it pertained to Indian Architecture, Painting and Music.

The Executive Committee left the matter to a small Sub-committee consisting of Dr. N. Ray, Mr. S. S. Saith and the Honorary Secretary, which Committee referred six topics to two of its members and Mr. Prabhat Mookerji of the Santiniketan for scrutiny either by themselves or with the help of others. Mr. Mookerji has done his part as far as the Indian Philosophy (181.4) and 294.1 to 294.5 are concerned.

The idea of publishing these expansions as worked out by our Association is deferred till a few more topics are ready.

### FINANCES.

The audited accounts of the Association for the two years 1939-40 and 1940-41 are reproduced as Appendix V. As in previous years, these were audited by Messrs. George Reid & Co. of Calcutta to whom the Association is grateful for their kindness and help.

The period under review opened with a balance of Rs. 2,810-4-8 and closed with Rs. 3,872-14-6; or it rose by Rs. 1,562-10-8, during the two years. The income for the two years was Rs. 1,362-8-0 and Rs. 1,420-11-0 respectively. That for the first year included a sum of Rs. 500 as donations for the Union Catalogue. The membership fees brought Rs. 702-12-0 and Rs. 1,356-12-0 respectively; while the sale of the Association's publications gave Rs. 152-12-0 and Rs. 63-5-0 respectively. A sum of Rs. 300 was received from the Reception Committee of the Patna Conference as donation, which sum is generally intended for bearing the cost of the printing of the Proceedings of the Conference.

Coming to the other side, it will be found that the sums of Rs. 352-7-0 and Rs. 861-1-8 only were spent in these two years, which include no extraordinary expenditure, barring the payment of a sum of Rs. 200 in 1940-41, to the Editor of the Union Catalogue, as part of the honorarium that the Council decided to offer him for his labour.

The balance on 31st March, 1941 was Rs. 3,872-14-6 as compared with Rs. 2,810-4-8 on the corresponding date, two years before. Of this amount, Rs. 1,825-0-0 belongs to the Union Catalogue; Rs. 466-11-0 to the Reserve Fund and the rest, viz., Rs. 1,581-3-6 to the general fund of the Association. According to the decision of the Executive Committee a sum of Rs. 3,000-0-0 has been put in fixed deposit account with the Central Bank of India, Calcutta, from 2nd January 1942.

## THE FOURTH LIBRARY CONFERENCE.

At the invitation of the Bihar Library Association, the Fourth All India Library Conference was held in Patna from the 15th to the 17th April, 1940. The Patna University donated a sum of Rs. 400-0-0 as their contribution towards the expenses of the Conference. It was presided over by Mr. John Sargent, the Educational Commissioner with the Government of India, and the session was inaugurated by the Hon'ble Sir Arthur Trevor Harries, Chief Justice of the High Court of Judicature at Patna. Dr. S. Sinha, Bar-at-Law, M.L.A., and Vice-Chancellor of the University, was elected Chairman of the Reception Committee; while Khan Bahadur Mirza Akhtar Husain, Assistant Registrar of the University was one of the Vice-Presidents, but was actually responsible for looking after all the arrangements. Rai Mathura Prasad and Mr. Indra Narain Sinha, were the Joint Honorary Secretaries, and the Registrar of the University acted as Treasurer.

The Reception Committee collected a sum of Rs. 1,025-0-0 for the purpose of meeting the expenses, but spent actually Rs. 628-4-0, leaving a balance of Rs. 396-12-0; out of which Rs. 300 were donated to the Indian Library Association.

The delegates included persons from practically every province, e.g., the Punjab, Delhi, the United Provinces, Bengal, Orissa, Madras, the Central Provinces and Berar, Bombay, and Indian States like Hyderabad-Deccan and Baroda.

Quite a large number of messages of good wishes were received both from various parts of India and abroad, which included those sent by the Vice-Chancellors of practically all Indian Universities; Sir Mirza Ismail, Dewan of Mysore; and Pandit Jawahar Lal Nehru.

A detailed account of the Conference was published in the Proceedings issued about the end of March, 1941.

The action taken on the various resolutions passed at the Conference is detailed in the following paragraphs.

#### Resolution No. 4.

4. Resolved that the Universities, where part-time or Honorary Librarians are in charge of their libraries be requested through the Inter-University Board to abolish that system and to have whole-time and paid librarians.

This resolution, the importance of which cannot be disputed was referred to the Inter-University Board for being considered by them at their meeting that was to be held in January, 1942, in Annamalai-nagar. The reply from the Board is still being awaited.

#### Resolution No. 5.

5. Resolved that the Central and Provincial Governments and Indian States be requested to create Departments of Libraries for the establishment, maintenance, and extension of Library service, and to extend facilities to the public for the use of departmental libraries under their control, as far as practicable.

As directed, this resolution was brought to the notice of the Government of India, the eleven Provincial Governments, and the Governments of certain Indian States like, Hyderabad-Deccan, Baroda; Mysore; Kashmin; Cochin; Travancore; Jaipur; Gwalior, Indore; Rampur; Patiala; Bahawalpur; Bikaner; Jaisalmer; Kolhapur; Bhopal; Kapurthala; Nawanagar, and others.

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The replies so far received may be summarised as follows:—

1. **The Government of India** regret their inability to open new libraries for the use of public in the Centrally administered areas due to the present financial difficulties. Government are not convinced that much useful purpose would be served by throwing open to the public the various departmental libraries.
2. **Madras** ... Separate agency to maintain and improve the 1187 libraries in the Presidency is not necessary. The Inspecting officers of the Education Department inspect these libraries also once a year. Out of the said libraries 859 are under local boards.
3. **Bombay** ... Separate Department to look after libraries not thought necessary.  
Public have access to the Secretariat Library. Our recommendations are covered by those made in the Report of the Library Development Committee, which is under the consideration of Government.
4. **C. P. & Berar** ... The Secretariat Library of the Government is open to the public for use on certain conditions, while the rest of the resolution is under the consideration of the Education Department.
5. **Punjab** ... Matter referred to the Director of Public Instruction.
6. **Orissa** ... Matter receiving attention.
7. **N. W. F. P.** ... Libraries attached to the three colleges in the Province and those attached to schools both under Government and local bodies are open for the use of teachers and students, and the Government do not think any further action in the matter necessary.



8. **U. P.** ... Government have already provided extensive library facilities and the facts about libraries in the Province are already known to them.
9. **Assam** ... Government will bear in mind the recommendations contained in the resolution, when funds permit them to take any such action. A non-Government Library Association has been started in Assam by the Director of Public Instruction.
- Sind and Bihar have not replied as yet, in spite of a reminder.
10. **Mysore** ... Receipt of letter acknowledged.
11. **Travancore** ... Government is already doing what is desirable, and as proof thereof, have sent an account of the activities of certain libraries. This account was sent to the Editor, the Modern Librarian for publication in that journal.
12. **Gwalior** ... Forwarded to Home Secretary for disposal.
13. **Junagadh State** is doing its best to extend facilities to public for the use of the State controlled library, as far as practicable.

No replies were received from any other Indian State addressed in the matter.

#### Resolution No. 6.

6. Resolved that the Indian Library Association should open an Information Bureau to collect information on all matters of interest to librarians and to supply such information on request; and all librarians be requested to co-operate with the Bureau by sending any new idea or development in librarianship which they may come across.

All the Provincial Library Associations were requested to bring the matter to the notice of as many librarians as practicable, so as to secure information worth recording in the Bureau. The Associations themselves were also asked to lend a helping hand in the matter, by acting in similar way. A letter was also addressed to the Editor, Modern Librarian requesting him to publish that, so as to bring the

question to the notice of as many persons as possible. Similarly all the members of the Association were addressed and thus all possible publicity was given to the proposal.

Mr. Sant Raim Bhatia, the sponsor of this resolution at the last Conference was constantly consulted in order to give shape to the resolution, and the Executive Committee appointed a small Committee consisting of :—

1. The Librarian, Andhra University Library, Waltair, Madras.
2. The Librarian, Dyal Singh Public Library, Lahore.
3. The Assistant Librarian, Bai Jerabai Wadia Library, Fergusson College, Poona.
4. The Librarian, Imperial Agriculture Research Institute, New Delhi.
5. The Librarian, Osmania University Library, P. O. Lalgudda, Hyderabad-Deccan.
6. The Officer-in-Charge, Patna University Library, P. O. Bankipore, Patna.
7. The Librarian, Jaffna College, Vaddukoddai, Ceylon.
8. The Editor, Modern Librarian, Lahore,

was appointed to draft a scheme. Mr. Bhatia was the Convener of this Committee; and two schemes (one prepared by Mr. Bhatia and the other by Mr. K. K. Guha-Roy of the Imperial Agricultural Research Institute) were considered by the Executive Committee. They felt inclined to adopt the one prepared by Mr. Guha-Roy, which appeared to be more practical. They further decided that the office be located in the University Library, Lahore and that Mr. Saith, who had happily been transferred to that place be put in charge of the Bureau. As Mr. Saith was to conduct the Bureau, the two schemes were referred to him for opinion as also to know whether he was prepared to take charge of the Bureau. He had not replied finally till the time that this report was written, and the matter is consequently to go before the meeting of the Council.

#### Resolution No. 7.

7. Resolved that a Committee be appointed to explore the possibilities of establishing free public libraries in at least all provincial capitals; and that the Committee be authorised to frame a model Indian Libraries Act to further the cause of the free Public Library movement.

The matter was considered by the Executive Committee, but they were of the opinion that having regard to the prevailing circumstances, it was not expected that any useful purpose would be served by pressing the desirability of establishing free public libraries, as far as the first part of the resolution was concerned. As to the second, they instead of appointing a Committee requested Rao Sahib S. R. Ranganathan, Librarian of the Madras University Library, and Honorary Secretary, Madras Library Association who had made a special study of the subject, to frame a Model Library Bill. The Rao Sahib was good enough to accede to this request of the Committee, and has actually drafted the Bill in question which appears in this Report as Appendix VI. The matter is to be further considered at the next meeting of the Council of the Association, to be held in Bombay.

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#### Resolution No. 8.

8. Resolved that this Conference while appreciating the efforts of the Government of Bihar and Dr. Syed Mahmud in the cause of Mass Literacy requests the said Government to help the Bihar Library Association and further the cause of library movement in the Province by encouraging the establishment of more libraries for the new literates.

The resolution was brought to the notice of the Government of Bihar and the necessary extract from their reply is reproduced below :

“The Provincial Government are already taking necessary action to prevent literates from relapsing into illiteracy by starting new village libraries for the post literates, they do not consider that any grant can be given to the Bihar Library Association for this purpose in the present state of financial stringency.”

A copy of this reply was sent to the Bihar Library Association, Patna.

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#### Resolution No. 9.

9. Resolved that this Conference requests the Government of Bihar to give due consideration and weight to the Library scheme prepared by the Bihar Library Association and to enforce the same or such part of it as may be practicable, at an early date.

A copy of the scheme referred to in the resolution was forwarded along with this resolution to the Government of Bihar, and the necessary extract from their reply is given below :

“The scheme referred to therein was considered by the late Ministry in 1939-40 and as a result a sum of Rs. 30,000 was provided in the budget of that year for the organization of libraries, out of which Rs. 20,000/- was distributed as grants to existing libraries and Rs. 10,000/- was spent on organizing new libraries in the rural areas. This grant has been repeated at a reduced scale of Rs. 15,000/- a year on a non-recurring basis in the budget of the Province for 1940-41 and in the current year. The provision of this amount annually is itself a matter of some difficulty. While the Provincial Government sympathise with the objects of the scheme (though they do not agree in all its details), and will endeavour to make some provision each year for the purpose consistent with their other obligations, they hope, it will be realized that it is not possible for them to consider a scheme of this magnitude at the present juncture.”

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#### **Resolution No. 10.**

10. Resolved that the affiliating universities be requested (through the Inter-University Board) to devote special attention to college libraries, during the periodical inspection of colleges, and that a qualified librarian be associated with the inspection, specially for this purpose.

The matter was referred to the Secretary, Inter-University Board, in June last year; but no reply has as yet been received from him. The matter is being pursued.

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#### **Resolution No. 11.**

11. Resolved that it is highly desirable on the part of the Indian Library Association to have an organ of its own in the form of a quarterly journal, and that for this purpose they may explore the possibility of taking over the Modern Librarian from its present authorities, failing which the Association may proceed with the project.

The Punjab Library Association were addressed regarding the question of taking over the “MODERN LIBRARIAN” to serve as the organ of the Indian Library Association. No reply having been received from them, in spite of reminders, including the one to their President, the Executive Committee had no option but to proceed

with the plan of starting a new journal of their own. This was agreed to at the meeting of the Committee held on the 21st November, 1941 ; and Dr. N. Ray and the Honorary Secretary were entrusted to work out the scheme. This (*vide* Appendix No. VII) was approved by the Executive Committee in their meeting held on the 6th February, 1942. The journal will be a quarterly publication and will be called the Library Bulletin. It will start from April, 1942, and will be supplied free to members of the Association and on payment of an annual subscription of Rs. 3 to others. Dr. N. Ray and Khan Bahadur K. M. Asadullah are to be the Joint Editors, but are to be helped by a Board of Assistants, or representatives.

### Resolution No. 12.

12. Resolved that this Conference recommends to the various Provincial Governments and the Provincial Library Associations the advisability of undertaking a survey of libraries in their respective provinces, or of expediting its completion where it is already in progress ; and that the Provincial Governments be further requested to render financial assistance to any Library Association, which undertakes this task, in case the Government itself is not in a position to arrange for the survey.

All the eleven Provincial Governments and three Chief Commissioners (Delhi, Ajmer-Merwara, and Coorg) were addressed in this behalf, as also ten Library Associations whether affiliated to this Association or not. The replies received from some of them are briefly given below :

1. **Delhi** ... Receipt acknowledged.
2. **Bombay** ... In view of the fact that the Government had recently appointed a Library Development Committee, whose Report was before them for consideration, they did not think that any further action need be taken.
3. **C. P. & Berar** ... The Government maintain a list of all kinds of libraries in that province, but have decided to call for certain detailed information with regard to these libraries, in future, and so no further action seems necessary. These details require

the type of library to be mentioned and whether any Mss. or valuable books are possessed by these libraries.

4. Bihar ... The Government sympathise with the proposal but due to war conditions are unable to take any action in the matter.
5. Coorg ... There are small libraries in two High Schools and the question of opening some small libraries in Higher Elementary schools is engaging the attention of the authorities.
6. Ajmer-Merwara ... Action has been taken to have a survey made and further communication has been promised.
7. Madras ... No action till after the war.
8. Punjab ... Matter referred to the Director of Public Instruction.
9. N. W. F. P. ... Question referred to the Director of Public Instruction.
10. United Provinces ... Government have already provided extensive library facilities and the facts about the libraries in the Province are fully well known to them.
11. Assam ... The recommendation made by the Indian Library Association will be borne in mind, when funds permit the Government to take the action suggested.
12. Bengal, Sind and Orissa, have not replied as yet.

No reply was received from any Library Association.

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#### Resolution No. 13.

13. Resolved that this Conference impresses upon the Central and Provincial Governments the necessity of providing one library in each province with the apparatus for taking photographic copies of Mss., and of rare and out-of-print books available in libraries and with private individuals, with a view to promoting the cause of learning.

The Government of India and the eleven Provincial Governments were addressed in the matter; and the summary of their respective replies is given below :

<b>Government of India</b>	...	Due to present financial stringency, they are unable to entertain the proposal to provide the apparatus in question at the Imperial Library, Calcutta.
<b>Madras</b>	...	No action till after the war.
<b>Punjab</b>	...	Transferred to the Director of Public Instruction.
<b>Bombay</b>	...	The Government Photo Registry Office, Poona has been instructed to charge concessional rates for copying Mss. or rare books from registered libraries of the province, as is done in the case of <i>bona fide</i> research workers.
<b>United Provinces</b>	...	Still under consideration. Decision will be communicated later.
<b>Assam</b>	...	Recommendation will be borne in mind, when funds permit the Government to take any action in the matter.
<b>N. W. F. P.,</b>	<b>Bihar,</b>	No replies received.
<b>Orissa, Sind, Bengal,</b>		
<b>C. P. and Berar.</b>		

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#### Resolution No. 14.

14. Resolved that the compilation of lists of books published in various Indian languages which could usefully be translated into any other Indian languages be undertaken, with a view to promoting better understanding between the various provinces of India.

The Executive Committee decided to request the undermentioned societies to help them in recommending publications which could be translated in other languages, as is contemplated in the resolution :

(1) The Royal Asiatic Society of Bengal, Calcutta.

(2) The Bombay Branch of the Royal Asiatic Society of Great Britain and Ireland, Bombay.

(3) The Bangya Sahitya Parishad, Calcutta.

(4) Nagri Pracharni Sabha, Benares.

(5) The Bhandarkar Oriental Research Institute, Poona.

(6) Anjuman i Taraqqi i Urdu, Delhi.

No. 1. The Society supplied its catalogue of publications by them, which showed that the object of the resolution was not appreciated.

No. 2. The Society's library did not specialise in books published in Indian languages and so was unable to supply the required lists.

No. 3. They regret their inability to compile the required lists.

No. 4. The Sabha supplied a list of its publications, and offered to help by pointing out which of those publications were important.

Nos. 5 and 6—have not so far, in spite of a reminder, sent any reply.

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## APPENDIX I.

**List of members of the Indian Library Association,  
as corrected up to 31st March, 1942.****INDIVIDUAL MEMBERS.**

1. **KUMAR MUNINDRA DEB RAI MOHASHAY,**  
21-F, Rani Shankari Lane,  
Kahighat, Calcutta.
2. **MR. R. GOPALAN,**  
Librarian, Imperial Secretariat Library,  
Government of India, New Delhi.
3. **THE LIBRARIAN,**  
Revenshaw College,  
Cuttack.
4. **DR. M. O. THOMAS,**  
Dy. Librarian, Madras University Library,  
Madras.
5. **MR. SANT RAM BHATIA,**  
Librarian, Forman Christian College Library,  
P. O. Ichhra, Lahore.
6. **MR. N. C. GHOSH,**  
Sheoraphuli Rajbati, Sheoraphuli,  
Hooghly.
7. **MR. K. SELLIAN,**  
Librarian, Jaffna College Library,  
Jaffna, Ceylon.
8. **MR. V. M. KOLHATKAR,**  
Librarian, Sir Parashurambhan College Library,  
Poona.
- MR. MOHAMMAD SHAFF,**  
Librarian, Imperial Council of Agricultural Research,  
New Delhi.
10. **MR. K. NAGARAJA RAO,**  
Librarian, Annamalai University,  
Chidambaram (S. India).
11. **KHAN BAHADUR K. M. ASADULLAH,**  
Librarian, Imperial Library,  
Calcutta.
12. **RAI MATHURA PRASAD,**  
C/o The Bihar Hitaishi Library,  
Patna City.

**INDIVIDUAL MEMBERS—Contd.**

13. **THE LIBRARIAN,**  
Allahabad University Library,  
Allahabad.
14. **MR. K. KASTHURI RANGA CHARI,**  
Librarian, Public Library,  
Bangalore.
15. **MR. A. F. M. ABDUL ALI,**  
3, Nawab Abdul Rahman Street,  
Calcutta.
16. **SYED BASHIRUDDIN AHMED,**  
Librarian, Lytton Library, Muslim University,  
Aligarh.
17. **MR. S. CHATTERJI,**  
Librarian, Commercial Library,  
1, Council House Street. Calcutta.
18. **DR. WALI MOHAMMAD,**  
Professor of Physics,  
Lucknow University, Lucknow.
19. **MR. S. S. SAITH,**  
Librarian, Punjab University Library,  
Lahore.
20. **THE PRINCIPAL,**  
Halley College of Commerce,  
1, Cust Road, Lahore.
21. **THE LIBRARIAN,**  
Amir-ud-Daula, Govt. Public Library,  
Lucknow.
22. **MR. R. R. MUKHERJEE,**  
Librarian, Zoological Survey of India,  
Indian Museum, Calcutta.
23. **MR. A. WARISI,**  
Asstt. Librarian, Meerut College,  
Meerut (U. P.)
24. **MR. MOTI CHANDRA VARMA,**  
16/84, Civil Lines,  
Cawnpore.
25. **MR. HIMATLAL KALIDAS VYAS,**  
People's Free Reading Room & Library,  
Dhobi Tolab, Bombay.

**INDIVIDUAL MEMBERS—Contd.**

26. **SYED ISMAIL QADRI,**  
Osmani University Library,  
Hyderabad, Deccan.
27. **MR. RAMLAKSHMAN GIRI,**  
Village Konhurah, P. O. Daudpur,  
Distt. Saran.
28. **DR. D. R. BHANDARKAR,**  
2/1, Lovelock Street,  
Ballygunge, Calcutta.
29. **THE LIBRARIAN,**  
Patna College, Bankipore,  
Patna (Bihar).
30. **SARDAR SOHAN SINGH,**  
Librarian, Dyal Singh Library,  
25, Nisbet Road, Lahore.
31. **MR. MADAN GOPAL,**  
Librarian, Legislative Department,  
Government of India, New Delhi.
32. **MR. SUDHINDRANATH CHAKRAVARTI,**  
Dacca University Library,  
P. O. Ramna, Dacca.
33. **MR. SUNIL KRISHNA BAGCHI,**  
Library of the Central Advisory Board of Education,  
New Delhi.
34. **MR. DWIJENDRALAL BANERJI,**  
C/o Central Library,  
The University, Calcutta.
35. **MR. P. N. MUKHERJI,**  
Librarian, Technical Library Research & Central Laboratory,  
Tata Iron & Steel Co., Ltd., Jamshedpur.
36. **MR. S. SRINIVASA RAO,**  
Librarian, Sarasta Nektan,  
Dist. Central Circulating Library,  
Vetapatam, Dist. Guntur.
37. **MR. R. S. PARKHI,**  
Assistant Librarian,  
Fergusson College, Poona.
38. **MR. K. G. BHAGWAT,**  
Librarian, Native Marathi Vidyalaya,  
High School, Poona.

**INDIVIDUAL MEMBERS—Contd.**

39. **THE LIBRARIAN,**  
St. Xavier's College,  
Bombay.
40. **DR. P. M. JOSHI,**  
Librarian, Bombay University Library,  
Bombay.
41. **MR. A. K. ROY,**  
Bureau of Public Information, Deptt. of Public Information  
and Broadcasting, Govt. of India, New Delhi.
42. **MR. G. M. PATIL,**  
Kannada Research Office,  
Dharwar.
43. **MR. M. HAMID UZ ZAFAR,**  
Matyala Compound, Himayat Nagar,  
Hyderabad, Deccan.
44. **PROFESSOR PARMANAND,**  
Special Officer, University Committee,  
Council Chamber, Lucknow.
45. **MISS F. SALZER,**  
Librarian, Isabella Thoburn College,  
Lucknow.
46. **MR. RAFIUDDIN AHMED,**  
Hardinge Library, Queens Gardens,  
Delhi.
47. **RAI SAHIB I. N. SINHA,**  
Librarian, Sinha Library,  
Patna.
48. **MR. JAGABANDAN LAL BHATNAGAR,**  
A. H. Q. (Central Library),  
New Delhi.
49. **MR. M. N. KANZRU,**  
Payin Bagh, Bharatpur (State),  
Rajputana.
50. **MR. JAMIL AHMED NAQVI,**  
C/o Imperial Library,  
Calcutta.
51. **MR. JOHN SARGENT, M.A., C.I.E.,**  
Educational Commissioner with the  
Government of India,  
Department of Education,  
Health and Lands,  
New Delhi.

**INDIVIDUAL MEMBERS—Concl'd.**

52. MR. NUT BEHARI CHOUDHURY,  
Konnagar H. E. School,  
Distt. Hooghly.
53. MR. BIMALENDU MAZUMDAR,  
94/2, Monoharpukur Road,  
Calcutta.
54. MR. GANGA PROSAD GHILDIYAL,  
Indraprastha College Library,  
Alipore Road, Delhi.
55. MR. MISRI LALL YADAVA,  
Ramdhani Mandir,  
Nandgola, Patna City.
56. MR. T. C. DATTA,  
Inspector of Works,  
E. I. Railway, Burdwan.
57. MR. T. D. WAKNIS,  
Curator, Central Library,  
Baroda.
58. MR. N. A. DALAL, School of Economics and Sociology  
University of Bombay,  
Bombay.
59. PROF. K. S. B. SASTRI,  
Warden, D. G. N. College (Library Depart.),  
Hyderabad, Sind.
60. MR. SURAJ PRASAD MAHAJAN,  
Secretary, Sri Monulala Library,  
Gaya.

**LIFE-MEMBERS.**

1. RAO SAHIB S. R. RANGANATHAN,  
Librarian, Madras University Library,  
Madras.
  2. DR. K. C. KUNHAN RAJA,  
Director, Adyar Library, Adyar,  
Madras.
  8. MR. A. M. R. MONTAGU, I.S.E.,  
Superintending Engineer, Irrigation Branch, Punjab,  
C/o Lloyds Bank Ltd., Chandni Chawk, Delhi.
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## LIBRARIES.

NAME OF LIBRARY.	NAME OF REPRESENTATIVE.
1. ANNAMALAI UNIVERSITY LIBRARY, Chidambaram (S. India).	THE LIBRARIAN.
2. CALCUTTA UNIVERSITY LIBRARY, Calcutta.	THE LIBRARIAN.
3. THE IMPERIAL LIBRARY, 34, Chittaranjan Avenue, Calcutta.	THE LIBRARIAN.
4. THE IMPERIAL SECRETARIAT LIBRARY, Department of Education, Health and Lands, Government of India, New Delhi.	THE LIBRARIAN.
5. THE LIBRARY OF THE IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH, New Delhi.	THE LIBRARIAN.
6. BENARES HINDU UNIVERSITY LIBRARY, Benares.	THE LIBRARIAN.
7. PUNJAB UNIVERSITY LIBRARY, Lahore.	THE LIBRARIAN.
8. NAGPUR UNIVERSITY LIBRARY, Nagpur, C. P. and Berar.	THE LIBRARIAN.
9. MADRAS UNIVERSITY LIBRARY, Madras.	THE REGISTRAR, Madras University, Madras.
10. OSMANIA UNIVERSITY LIBRARY, Hyderabad, Deccan.	THE LIBRARIAN.
11. DELHI UNIVERSITY LIBRARY, Delhi.	THE LIBRARIAN.
12. LIBRARY OF THE CENTRAL BOARD OF IRRIGATION, Simla.	THE SECRETARY.
13. DACCA UNIVERSITY LIBRARY, Rajma, Dacca.	THE LIBRARIAN.

LIBRARIES.—*Contd.*

NAME OF LIBRARY.	NAME OF REPRESENTATIVE.
14. PATNA UNIVERSITY LIBRARY, Patna.	THE LIBRARIAN.
15. LIBRARY OF THE ZOOLOGICAL SURVEY OF INDIA, Indian Museum, Calcutta.	THE LIBRARIAN.
16. LIBRARY OF THE GEOLOGICAL SURVEY OF INDIA, Indian Museum, Calcutta.	THE LIBRARIAN.
17. IMPERIAL VETERINARY RESEARCH INSTITUTE, Mukteswar, Kumaon, U. P.	THE LIBRARIAN.
18. TRAVANCORE UNIVERSITY LIBRARY, Trivandrum, Travancore.	THE LIBRARIAN.
19. ANDHRA UNIVERSITY LIBRARY, Waltair.	THE LIBRARIAN.
20. LIBRARY OF THE DEPARTMENT OF LABOUR, Government of India, New Delhi.	THE LIBRARIAN.
21. THE LINLITHGOW LIBRARY, Imperial Agricultural Research Institute, New Delhi.	THE LIBRARIAN.
22. FOREST RESEARCH INSTITUTE & COLLEGE, Dehra Dun.	THE LIBRARIAN.
23. LIBRARY OF THE POLITICAL DEPARTMENT, Government of India, New Delhi.	THE LIBRARIAN.
24. LIBRARY OF THE LEGISLATIVE DEPARTMENT, New Delhi.	THE LIBRARIAN.
25. COMMERCIAL LIBRARY, Department of Commercial Intelligence and Statistics, 1, Council House Street, Calcutta.	THE LIBRARIAN.
26. THE CENTRAL ARCHAEOLOGICAL LIBRARY, Imperial Record Building, New Delhi.	THE LIBRARIAN.
27. MYSORE UNIVERSITY LIBRARY, Mysore.	THE LIBRARIAN.

**LIBRARIES—Concl'd.**

NAME OF LIBRARY.	NAME OF REPRESENTATIVE.
28. LIBRARY OF THE ROYAL BOTANIC GARDEN, Sibpur, Howrah.	THE LIBRARIAN.
29. LYTTON LIBRARY, Muslim University, Aligarh.	THE LIBRARIAN.
30. BOMBAY UNIVERSITY LIBRARY, Bombay.	THE LIBRARIAN.
31. LIBRARY OF THE DIRECTOR-GENERAL OF INDIAN MEDICAL SERVICE, New Delhi.	THE OFFICER SUPERVISOR.
32. THE BUREAU OF PUBLIC INFORMATION, Department of Public Information and Broadcasting, Government of India, New Delhi.	THE ADMINISTRA- TIVE OFFICER.

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## ASSOCIATIONS.

NAME OF ASSOCIATION.	NAME OF REPRESENTATIVE.
1. THE PUNJAB LIBRARY ASSOCIATION, C/o The Sanatan Dharma College, Lahore.	MR. ABNASHI RAM TALWAR.
2. THE GOVERNMENT OF INDIA LIBRARIES ASSOCIATION, C/o Imperial Secretariat Library, New Delhi.	THE SECRETARY OR PRESIDENT.
3. THE BENGAL LIBRARY ASSOCIATION, C/o Central Library, Calcutta University, Calcutta.	MR. T. C. DUTTA.
4. THE BIHAR LIBRARY ASSOCIATION, C/o Bihar Hitaishi Library, Patna City, Bihar.	THE HONORARY SECRETARY.
5. THE MAHARASHTRA LIBRARY ASSOCIATION, 64, Hindu Colony, Dadar, Bombay.	HONORARY SECRETARY.
6. ANDHRA DESA LIBRARY ASSOCIATION, Patamatalanka, Via Bezwada.	HONORARY SECRETARY.
7. DELHI LIBRARY ASSOCIATION, C/o Hardinge Library, Delhi.	HONORARY SECRETARY.
8. ASSAM PROVINCIAL LIBRARY ASSOCIATION, Thana Road, Shillong.	HONORARY SECRETARY.

## APPENDIX II.

**List of office-bearers, etc., elected at the General Meeting  
held on the 15th April, 1940, at Patna.**

***President :***

1. Mr. John Sargent, Educational Commissioner with the Government of India.

***Vice-Presidents :***

2. Dr. C. Kunhan Raja, Director, Adyar Library, Madras.
3. Dr. P. M. Joshi, Librarian, Bombay University Library.
4. Rai Mathura Prasad, Hony. Secretary, Bihar Library Association and of the Bihar Hitaishi Library, Patna.

***Chairman of the Council :***

5. Dr. D. R. Bhandarkar, Formerly Professor, Calcutta University.

***Deputy Chairman of the Council :***

6. S. Sohan Singh, Librarian, Dyal Singh Public Library, Lahore.

***Treasurer :***

7. Mr. A. F. M. Abdul Ali, formerly Keeper of Records of the Government of India.

***Secretary :***

8. Khan Bahadur K. M. Asadullah, Librarian, Imperial Library, Calcutta.

***Deputy Secretary :***

9. Mr. S. S. Saith, Superintendent, Reading Rooms, Imperial Library, Calcutta.

**Council of the Association.**

***1. Representatives of Patrons, Donors, Life-members and Members.***

1. Dr. M. O. Thomas, Dy. Librarian, Madras University Library.
2. Mr. S. Bashir-ud-din, Librarian, Lytton Library, Muslim University, Aligarh.
3. Kumar Munindra Deb Rai Mahashay, President, Bengal Library Association.
4. Mr. Sant Ram Bhatia, Librarian, Forman Christian College Library, Lahore, and Editor, the Modern Librarian.

5. Mr. Labhu Ram, Librarian, Punjab University Library, Lahore. (Rai Sahib Indra Narain Sinha, Patna, from 20th October 1941.)
6. Mr. R. Gopalan, Librarian, Imperial Secretariat Library, Government of India, New Delhi.
7. Mr. Mohammad Shafi, Librarian, Imperial Council of Agricultural Research Library, New Delhi.
8. Rao Sahib S. R. Ranganathan, Librarian, Madras University Library, and Secretary, Madras Library Association. (Dr. Wali Mohammad, Lucknow University, Lucknow, from 20th October 1941.)
9. Mr. S. Chatterji, Librarian, Commercial Library, Commercial Intelligence Department, Calcutta.
10. Mr. Praphulla Mookerji, Librarian, Technical Library, Tata Iron & Steel Co., Ltd., Tatanagar.

#### *II. Representatives of Affiliated Associations :*

1. Representative of the Punjab Library Association. (Mr. R. Manchanda). (Andhra Desa Library Association, from 20th October 1941).
2. Representative of the Government of India Libraries Association (Hony. Secretary).
3. Representative of Madras Library Association. (Rao Bahadur Krishnaswami Ayyar). (Delhi Library Association, from 20th October 1941).
4. Representative of Bengal Library Association (Mr. T. C. Dutta).
5. Representative of Bihar Library Association. (Hony. Secretary).

#### *III. Representatives of Libraries :*

1. Librarian, Nagpur University Library. (Mr. Y. M. Mulay).
2. Librarian, Patna University Library. (Mr. G. P. Tiwari).
3. Librarian, Osmania University Library. (Mr. Yusuf-ud-din Ahmad).

4. Librarian, Calcutta University Library. (Dr. N. Ray).
5. Librarian, Benares Hindu University Library. (Mr. G. S. Misra).

*Note.*—All the office-bearers (Nos. 1—9 *supra*) are ex-officio members of the Council.

**Executive Committee :**

1. Chairman of the Council. (Dr. D. R. Bhandarkar) (ex-officio).
  2. Deputy Chairman of the Council. (Mr. Sohan Singh) (ex-officio).
  3. Treasurer. (Mr. A. F. M. Abdul Ali) (ex-officio).
  4. Hony. Secretary. (Khan Bahadur K. M. Asadullah) (ex-officio).
  5. Mr. Labhu Ram. (Mr. S. S. Saith, from 20th October 1941).
  6. Dr. N. Ray.
  7. Mr. S. Chatterjee.
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## APPENDIX III.

## Committee for the Revision of the Directory.

## List of members.

Name.	Address.	Areas.
1. Dr. M. O. Thomas, ...	University Library, Madras.	Madras Presidency. (Excluding Andhra Districts).
2. Mr. S. Parthasarathi,	Andhra University Library, Waltair.	Andhra Districts.
3. Dr. A. N. Narasimhia,	University Library, Mysore.	Mysore, States in the Madras Presidency. (Travancore, Cochin, etc.)
4. Mr. J. M. Kanitkar,	Deccan Research Institute, Poona.	Bombay Presidency (excluding Poona and Bombay), Kolhapur and other States in the Deccan States Agency.
5. Mr. R. S. Parkhi, ...	Fergusson College Library, Poona.	Cities of Poona and Bombay.
6. Mr. Yusufuddin Ahmad.	Osmania Univer- sity Library, Hyderabad.	Nizam's Dominions.
7. Mr. D. Misra, ...	Revenshaw College Library, Cuttack.	Orissa, States in Orissa States Agency.
8. Mr. Y. M. Mulay, ...	University Library, Nagpur.	C. P. and Berar, Chattisgarh States Agency.
9. N. W. F. P.	... Mr. Sohan Singh for 2 colleges. Director of Public Instruction for any other.	
10. Kashmir	... Mr. Sohan Singh.	
11. Sind	... Director of Public Instruction.	
12. Rajputana	... Directors of Public Instruction of indi- vidual States.	
13. Baluchistan	... Director of Public Instruction.	
14. Assam	... Director of Public Instruction.	

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|----------------------|-----|---|
| 15. Bengal           | ... | Bengal Library Association (Dr. N. Ray).  |
| 16. United Provinces | ... | Messrs. Bashiruddin, Fazal Elahi, Allahabad University Librarian; Registrar, Agra University; Librarian, Benares Hindu University and Director of Public Instruction. |
| 17. Punjab           | ... | Mr. Sant Ram.   |
| 18. Bihar            | ... | Assistant Registrar and<br>Rai Mathura Prasad.  |
| 19. Baroda           | ... | Mr. T. D. Waknis.   |
| 20. Gwalior          | ... | Director of Public Instruction.   |
| 21. Delhi            | ... | Mr. R. Gopalan.   |
| 22. Nepal            | ... | Director of Public Instruction.   |
| 23. Gujrat-Kathiawar | ... | Dr. P. M. Joshi.  |
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## APPENDIX IV.

### Scheme for Training in Librarianship.

#### INTRODUCTION.

One of the objects with which the Indian Library Association was founded is the "promotion of the training of librarians." The scheme that is given in the following pages is in part fulfilment of that object.

In the very first Library Conference held in Calcutta in September, 1938, two resolutions which are reproduced below were adopted which form the basis of this scheme.

Resolution No. 7. "That this Conference recommends to the Council that Provincial Education Departments be requested to include in the curriculum of Training Institutions short courses in library science for the benefit of teacher-librarians."

In February 1935, correspondence was started with the various Education Departments, but none except two, viz., the United Provinces of Agra and Oudh and Assam showed any interest in the matter, and out of these two again, the former withdrew at a later stage, thus leaving Assam only as the province which actually took up the question seriously.

At the request of the Director of Public Instruction of Assam, the Association undertook to draw up a short syllabus suitable for adoption in the Teachers' Training Colleges. Dr. M. O. Thomas, the then-Librarian of the Andhra University Library, was entrusted with the work, and the syllabus drawn up by him was adopted by the Council of the Association, in January 1936.

At the further request of the said Director of Public Instruction, arrangements were made for deputing an instructor for delivering lectures to the students of St. Edmunds College, Shillong, in the years 1938, 1939, 1940 and 1941.

To carry out the recommendation made in the other resolution :

Resolution No. 10. "That this Conference recommends to the Council consideration of the minimum qualifications for a certificate of training required of trained librarians and that the Council should take steps to encourage the provision of facilities for such training keeping in view the demand for trained librarians;"

a committee consisting of Dr. Thomas, Kumar Munindra Deb Rai Mahashay, Mr. S. Bashir-ud-din, and the Hony. Secretary was formed, which prepared a scheme and placed that before the Council of the Indian Library Association in their Lucknow meeting (22-4-35)

for their consideration. It was referred back to the Committee for further elucidation, and the scheme in its modified form was circulated among the Council members in April 1936. The opinions differed so much that the Executive Committee of the Association thought it advisable to refer it again to the Special Committee in August, 1936. It was placed before the Council once more, at their Delhi meeting held on the 23rd December, 1937.

As another resolution somewhat similar to the one under consideration, reproduced below, was adopted at the Delhi Library Conference, it was thought advisable to amalgamate the two and refer them to a new Committee :

Resolution No. 10. "Resolved that the Indian Library Association be requested to set up a committee on which the existing library training centres be represented to examine the curriculum, etc., of those centres with a view to achieving standardization and uniformity in library training."

The Punjab University Library, the Madras University Library and the Imperial Library being the libraries concerned, their authorities were addressed in the matter, but as the representatives were not provided with necessary facilities to attend the meetings and they being unable to do so at their own expense, the Committee did not meet for the purpose in view. The Executive Committee on being approached deferred the consideration of the question till the Patna Conference held in April, 1940.

The matter was laid before the Council on the 13th April, 1940, when the question was placed in the hands of another Special Committee, with instructions to meet at once, and place their scheme before the Council at their next meeting in Patna. This was done, and the Council in their meeting of the 15th April, 1940, agreed to the skeleton scheme as drawn up by this Special Committee and advised them to draw up the syllabus, etc., and get it approved by the Council in circulation.

This Committee consisted of

Dr. P. M. Joshi, Librarian, Bombay University ;

Dr. N. Ray, Librarian, Calcutta University ;

Mr. S. S. Saith, Superintendent, Reading Rooms, Imperial Library ; and

The Hony. General Secretary of the Association (Khan Bahadur K. M. Asadullah, Librarian, Imperial Library, Calcutta).

The scheme that is reproduced in the following pages is the outcome of the deliberations of this Committee, which as already stated



has been approved by the Council, and is now placed before the various Associations, Universities, and libraries for consideration and adoption.

The scheme lays down the syllabus, along with lists of books recommended for study. These have been divided into two classes, texts and recommended books. A third category appears in an appendix, which consists of books for further study, or for the use of those who want to specialise in any of the branches of the subject, or have time to go through a vast literature without getting confused.

As this note is intended not only to be a short history of this scheme, but also to show the attempts made by the Indian Library Association in spreading the gospel of library training, it may not be out of place to mention also the fact that in the Lucknow Conference (1935), another resolution reading :

Resolution No. 9. "Resolved that having regard to the facilities now available for training in librarianship, the Conference suggests to the University of Bombay and the Library Association of the U. P. when formed, the desirability of opening classes in these two areas" was adopted to request the Bombay University and the U. P. Library Association to start classes for imparting training in librarianship, as it was felt that adequate facilities did not exist for the purpose in these parts of the country.

The authorities concerned were approached, but the U. P. Library Association deferred action till the return from England of its Hony. Secretary; and it is regretfully stated that even after that no steps have been taken in the matter. It is understood that the Bombay University contemplate starting classes shortly. The U. P.'s deficiency may perhaps be made up by the Muslim University, Aligarh, for they also have drawn up a scheme for the same purpose. But now that the Indian Library Association has evolved a scheme for general adoption, it is expected that it may be adopted by them and classes may come into existence earlier than contemplated. At the same time, it is found that the University of Calcutta and the Benares Hindu University are busy in devising ways and means to start similar classes in their respective Universities. This is not only indicative of the popularity of training, but also leads one to expect a bright future for librarianship in this country. But, it must not be forgotten, that overproduction is to be avoided, and the standard of training kept up. The remuneration and the prospects offered to trained men are not attractive already.

Imperial Library,  
CALCUTTA :  
8th August, 1941

K. M. ASADULLAH,  
Hony. General Secretary,  
Indian Library Association.

## SCHEME FOR TRAINING IN LIBRARIANSHIP

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### GENERAL RULES.

1. Training in Librarianship shall be of two kinds, the elementary and the higher, or the Certificate and Diploma courses.

2. The minimum educational qualifications required for the **ELEMENTARY** course, shall be the "Intermediate" for outsiders and the "Matric" in case of those already working in libraries. For the **DIPLOMA** course, only graduates shall be eligible for admission.

3. The duration of the period of training for the **Elementary** course shall be not less than four months, and that for the **Diploma** course not less than one academic year.

4. The **Diploma** course may be conducted at any University, and the **Imperial Library**; whereas instruction in the **Elementary** course may be given by a University, if it so decides, either in addition to the **Diploma Course** or by itself. Ordinarily, however, this course will be conducted by **Provincial Library Associations**, under the supervision of the **Indian Library Association**, which will also lay down the syllabus.

5. Persons already working in libraries shall not be eligible for admission to either courses, unless they have put in at least one year's paid service in a recognised library.

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## THE DIPLOMA COURSE

**Draft Rules, Syllabus and Courses of Study, etc.**

### R U L E S

1. Any University in India or any other institution duly authorised in this behalf by the Government of India in the Department of Education, Health and Lands shall be entitled to institute a Diploma Course of Training in Librarianship.

2. The course may be held annually or at longer intervals, as may be decided upon by the authorities conducting the course.

*Note.*—It is expected that in deciding about the frequency of conducting the course, the authorities concerned will bear it in mind that more Diploma-holders than can readily be absorbed by the profession are not produced; for which purpose co-ordination between the various centres of training will be desirable.

3. The course shall extend over one full academic year and there shall be at least one hour of theoretical and two hours of practical instruction, making a total of at least three hours of work, on every working day.

4. Admission to the course shall be limited to a maximum of 20 persons at any one time.

5. Candidates who have at any time taken the Bachelor's Degree in their Arts or Science or Commerce of any University in India or of any recognised University outside India shall be eligible for admission; but preference in this direction will generally be given to those who at the time of applying are working in a library. Ordinarily, not more than half of the total number of admissions offered shall go to those who are not working in libraries.

6. The total fee for the entire course including Examination fee etc., shall not exceed Rs. 100.

7. Candidates wishing to appear at the Diploma Examination shall be required to attend at least 75 per cent. of the theoretical and 85 per cent. of the practical classes held in the course of the academic year.

8. Candidates who are successful at the Examination will be awarded certificates to that effect having the distinction of a Diploma.

## SYLLABUS

Instruction will be given in the following subjects which will also form the subjects for examination, and marks will be allotted in the manner indicated below :—

1. *Classification :*

(a) Theory	One paper	100 marks.
(b) Practice	One paper	100 marks.

2. *Cataloguing and Indexing :*

(a) Theory	One paper	100 marks.
(b) Practice	One paper	100 marks.

*Note.*—Candidates will be required to achieve a fair standard of Library Handwriting to which due consideration will be given in 2 (b) above.

3. *Library Organisation and Administration :*

Organisation	One paper	100 marks.
Administration	One paper	100 marks.

*Note.*—Candidates will be required to put in at least 8 weeks of practical work in a library or libraries to be selected by the authorities concerned.

4. *Bibliography and Reference Work :*

## (a) Historical Bibliography including

Book-binding	...	...	One paper
			100 marks.

## (b) Systematic Bibliography and Reference

work	...	...	...	One paper
				100 marks.

5. *Book-selection :*

-	One paper	50 marks.
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6. *General knowledge :*

One paper	100 marks.
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This subject will include :—

- (a) Outline history of English literature.
- (b) „ „ „ Indian literatures.
- (c) „ „ „ Natural Sciences.
- (d) „ „ „ Social Sciences.

v. *Languages :*

One paper

50 marks.

*Note.*—Candidates will be required to offer two of the following languages, one from each group :—

**Group A.**

Any one language other than the candidate's mother-tongue out of (1) Arabic ; (2) Bengali ; (3) Gujarati ; (4) Hindi ; (5) Marathi ; (6) Iranian ; (7) Sanskrit ; (8) Tamil ; (9) Telegu ; (10) Urdu.

**Group B.**

French or German.

*Note.*—Candidates are required to have only working knowledge of the languages selected, such as will enable them to follow intelligently the contents and the title pages of books and periodicals.

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## SCOPE OF SUBJECTS

1. *Classification.*

Nature and purpose of Classification. Theory and general rules of Classification. Principal Classification Schemes ; their history and comparative study. Critical study of Dewey Decimal Classification scheme. Practical course in Decimal Classification.

2. *Cataloguing and Indexing.*

The object and purpose of cataloguing. Various forms and kinds of catalogues and their purpose. Detailed study of one of the principal cataloguing codes with special reference to Indian libraries. Comparative study of different codes. Indexing for special libraries. Directions for printing a catalogue.

3. *Library Organisation and Administration.*

(a) ORGANISATION.—Principles of library planning. Arrangement of furniture, fittings and book stock in the different departments. Special needs of University and College libraries. Problems of storage, shelving, preservation of book stock, and lighting.

(b) ADMINISTRATION.—Ordering and preparing of books for the shelves. Administrative records. Lending, Reference and Reading Room routines. Library statistics. Library finance. Purposes and functions of different types of libraries. Chief forms of library-extension work, including regional system. Office routine. Library Committee work. Preparation of Annual Report. History of Library Movement.

4. *Reference Work and Book-selection.*

(a) REFERENCE WORK.—Knowledge of different types of Reference works. Methods of using and study of Subject-bibliographies. Essential equipment of a Reference librarian, and assistance to readers.

(b) BOOK-SELECTION.—Principles of selection and evaluation of stock for different types of libraries, and for their various departments. Tools of book-selection. Method of selection (including treatment of suggestions from the users of a library). Formation and functions of a Book-selection Committee.

5. *Bibliography.*

Essentials of book production. Present-day methods and chronological study of paper, printing, illustration and binding. Collation and description of books. Material and compilation of Bibliographies.

## EXAMINATION

Candidates must take the examination as a whole in all the subjects. A candidate failing to qualify at any examination will have to appear again for the entire examination, but the question of the attendance to be required at theoretical and practical classes may be left to the decision of the authorities concerned.

In order to qualify at the examination candidates will have to obtain 40 per cent. marks in each subject individually, and 50 per cent. in the aggregate. There will be only two grades for successful candidates, *viz.*, Distinction and Pass. Those obtaining 70 per cent. marks in the aggregate will be deemed to have passed with Distinction, while those not obtaining less than 50 per cent. and not more than 70 per cent. in the aggregate will be placed in the Pass grade.

## COURSES OF STUDY

Works to be studied as text-books in each subject are grouped under "A," while those recommended for supplementary reading are shown under "B."

### I. Classification.

#### A

*Sayers, W. C. B.*—An Introduction to Library Classification. 5th rev. ed. 1938. Grafton. 10s.

*Dewey, M.*—Decimal Classification and Relative Index. 13th ed. 1932. Holmes. 55s.

*Richardson, E. C.*—Classification, Theoretical and Practical. 3rd ed. 1930. Holmes. 4s.

*Bliss, H. E.*—The Organisation of Knowledge in libraries and the Subject approach to Books. 2nd ed. 1939. Wilson. \$6.

#### B

*Brown, J. D.*—Library Classification and Cataloguing. Grafton. 7s. 6d.

Library of Congress Classification. Library of Congress. *In progress.*

*Brown, J. D.*—Subject Classification. 3rd rev. ed. 1939. Grafton. Rs. 30.

Classification. Decimale de l'Institut International de Bibliographie. 4v. 1927-33. Mondial. 100 frs.

- Sayers, W. C. B.*—Manual of Classification. 2nd rev. ed. Grafton. 80s.
- Phillips, W. H.*—Primer of Book Classification. 1938. A. L. A. 2s.
- Merrill, W. S.*—Code for Classifiers. 1928. A. L. A. \$1.60.
- Ranganathan, S. R.*—Colon Classification. 1939. Madras Library Association. Rs. 7/8.

## II. Cataloguing & Indexing

### A

- American Library Association* and (*British Library Association*.—Cataloguing Rules : Author and title entries. 1908. L. A. 6s.
- Sharp, H. A.*—Cataloguing. 2nd ed. 1938. Grafton. 18/-.
- American Library Association* : List of Subject Headings. 3rd ed. 1914. A. L. A. 15s. Or, Sears : Subject-headings for Small Libraries. 4th ed. 1939. Wilson. \$2.75.
- Cutter (C. A.)* and *Sanborn (K. E.)* Cutter's Author Marks for a Dictionary Catalogue. 1935. The Herold Job Print, Northampton. \$4.50.
- Hanson, J. C. M.*—A Comparative study of Cataloguing rules, based on the Anglo-American Code of 1908.

### B

- British Museum*.—Rules for compiling the Catalogue. 1936. British Museum. 2s. 6d.
- Bodleian Library*.—Rules for the Author-catalogue. 1923. O. U. P. 1s.
- Bishop, W. W.*—Practical Handbook of Modern Library Cataloguing. 2nd ed. 1927. Baltimore, Williams and Wilkins. \$1.75.
- Mann, M.*—Introduction to Cataloguing and the Classification of Books. 1930. A. L. A. \$3.
- Phillips, P. L.*—Notes on the Cataloguing, Care and Classification of Maps and Atlases, etc. Library of Congress.
- Ranganathan, S. R.*—Classified Catalogue Code. 1934. Madras Library Association. Rs. 5.
- Walsh, J. W. T.*—Indexing of books and periodicals. 1930. Arnold. Rs. 6.



### III. Library Organisation & Administration

#### A

*Doubleday, W. E.*—A Manual of Library Routine. 1933. Allen & Unwin. 10s. 6d.

*Headicar, B. M.*—A Manual of Library Organisation. 1935. Allen & Unwin. 10s. 6d.

#### B

*Drury, F. K. W.*—Order Work for Libraries. 1930. A. L. A. \$2.25.

*Baker, E. A.*—The Uses of Libraries. 2nd ed. 1930. U. L. P. 10s. 6d.

*Sayers, W. C. B.*—Revision of the Stock of a Public Library. 1929. Grafton. 5s.

*Public Libraries Committee.*—Report on Public Libraries in England and Wales. 1935. H. M. Stationery Office. 6s.

*Baker, E. A.*—The Public Library. 1924. Grafton. 10s. 6d.

*Brown, J. D.*—Manual of Library Economy. 5th ed. 1937. Grafton. 30s.

*Cant, Monica.*—School and College Library Practice. 1936. Allen & Unwin. Rs. 5.

*MacCollough, E. F. and Van Buren, M.*—Essentials in Library Administration. 4th rev. ed. 1931. A. L. A. 65 cents.

*Flexner, J. M.*—Circulation Work in Public Libraries. 1927. (Library Curriculum Studies). A. L. A. \$2.50.

*Doubleday (W. E.) ed.*—The Primer of Librarianship. 1931. Allen & Unwin. 7s. 6d.

*The Library Association.*—Survey of Libraries. 1938. L. A. 25s.

*Pafford, J. H. P.*—Library Co-operation in Europe. 1935. L. A. London. 21s.

*Ranganathan, S. R.*—Library Administration. 1935. Madras Library Association. Rs. 5.

*Harrod, L. M.*—Lending Library Methods. 1933. Grafton. 12s. 6d.

## IV (a). Reference Work

## A

*Cowley, J. D.*—Use of the Reference Material. 1937. Grafton. 7s. 6d.

*Wyer, J. I.*—Reference Work, a Text-Book for Students of Library Work and Librarians. 1930. A. L. A. \$2.50.

*Mudge, I. G.*—Guide to Reference books. 6th ed. 1936. A. L. A. \$5.

## B

*Warner, J.*—Reference Library Methods. 1928. Grafton. 12s. 6d.

*McCombe, C. E.*—The Reference Department. American Library Association. 1929. \$35.

*Ranganathan, S. R.*—Reference Service and Bibliography. v. 1. 1940. Madras Library Association.

## IV (b). Book-selection

## A

*McColvin.*—Theory of Book-selection for Public Libraries. 1925. Grafton. 7s. 6d.

## B

*Drury, F. K. W.*—Book-selection. 1930. A. L. A. \$2.75.

## V. Bibliography

## A

*Esdaile, A.*—A Student's Manual of Bibliography. 2nd ed. 1932. Allen & Unwin. 12s. 6d.

*Cowley, J. D.*—Bibliographical Description and Cataloguing. 1939. Grafton. 12s. 6d.

## B

*Esdaile, A.*—Sources of English Literature. 1928. Camb. U. P. 6s.

*McKerrow, R. B.*—An Introduction to Bibliography for Literary Students. 1928. O. U. P. 18s.

*Van Hoesen, H. B.* and *Walter, F. K.*—Bibliography, Practical, Enumerative, Historical. 1928. Scribner. 27s. 6d.

*Cockerell, D.*—Book-binding and the Care of Books. 4th ed. 1937. Pitman. 7s. 6d.

*American Library Association Committee on Book-binding:* Care and Binding of books and magazines. 1928. A. L. A. 50c.

## **THE ELEMENTARY COURSE**

### **Draft Rules, Syllabus and Courses of Study**

#### **RULES**

1. The course shall ordinarily be conducted by a Provincial Library Association in India, under the supervision of the Indian Library Association and in accordance with the rules and syllabus, etc., laid down by the last-named body.

The course may also be instituted by any Indian University if it so decides, either in addition to the Diploma Course or otherwise.

2. The course shall not be held more than once in a year.

3. The course shall last for a period not less than four months and with not less than four hours' work every day which will be divided equally between theoretical and practical work.

4. Admission to the course shall be limited to a maximum of 20 students.

5. The minimum qualification required for admission to the course shall be a pass in the Intermediate in Science or Arts of any University in India for persons not belonging to the library profession ; and a Matriculation certificate for those who must have been working in recognised libraries as paid servants, at the time of admission, for not less than one year.

6. The fee for the course shall be determined by the authorities conducting the course.

7. Those admitted to the class shall have to attend at least 75 per cent. of the theoretical and 85 per cent. of the practical classes held during the course, in order to qualify themselves for appearing at the examination.

8. At the end of the period of training an examination shall be held in the subjects mentioned below and according to rules laid down in this behalf.

9. Candidates shall take the examination in all the subjects including language.

10. Every candidate shall have to obtain at least 40 per cent. marks in each subject individually, and at least 50 per cent. in the

aggregate, in order to pass the examination. There shall be only one grade of successful candidates, called "Pass."

11. A successful candidate shall be awarded a certificate called the "Certificate of Training in Librarianship" which in the case of Library Associations shall be signed by the Presidents of both the Provincial and the Indian Library Association.

12. An unsuccessful candidate in any examination must, if permitted by the authorities concerned, attend the full course over again in order to qualify himself for appearing at the examination once more.

### SYLLABUS

The course shall consist of both theoretical and practical instruction in the subjects mentioned below. Every subject shall carry the marks shown against it. Students shall be required to make a study of only such parts of the books recommended, as may be dealt with by the instructor in his lectures.

#### 1. *Classification :*

Theory	One paper	100 marks.
Practice	One paper	100 marks.

Object and principles of Book Classification ; Dewey Decimal Classification scheme ; Outline knowledge of other important classification schemes ; General rules for classifying books ; Practical work.

#### 2. *Cataloguing :*

Theory	One paper	100 marks.
Practice	One paper	100 marks.

Kinds and Forms of Catalogue ; Purpose and principles of cataloguing ; Definitions ; Main or Author entry ; Subject entry ; References and Arrangement.

#### 3. *Library Administration :* One paper 100 marks.

Tools and method of book-selection ; Ordering and preparing of books for the shelves ; Issue methods ; Statistics ; Administration of different types of libraries.

#### 4. *Reference work and General Bibliography :*

One paper	100 marks.
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Different types of reference work and their use ; Methods of assistance to readers ; Essentials of book production, including book-binding ; Short Description of books.

#### 5. *Language :*

One paper	100 marks.
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A student shall be expected to acquire a working knowledge of one of the languages named below in addition to his mother-tongue, so as to be able to follow the titlepage and the subject matter of a book :—

Arabic; Bengali; French; German; Gujarati; Gurmukhi; Hindi; Hindustani; Iranian; Marathi; Sanskrit; Tamil; Telegu and Urdu.

In addition to lecture work, the instruction shall include visits to different types of libraries in the town, and practical work for four weeks in a suitable library.

## COURSES OF STUDY

### 1. CLASSIFICATION :

*Sayers, W. C. B.*—An Introduction to Library Classification. 5th ed. 1938. Grafton. 10s.

*Dewey, M.*—Decimal Classification. 13th ed. 1932. Holmes. 55s.

*Phillips, W. H.*—Primer of Book Classification. 1938. & A. L. A. 2s.

### 2. CATALOGUING :

Anglo-American Cataloguing Code. 1908. L. A. 6s.

*Sears, M.E.*—List of Subject Headings for a Small Library. 3rd ed. 1933. Wilson. \$2.75.

*Cutter-Sanborn.*—Alphabetic Order Table. 1935. Northampton. \$1.50.

### 3. LIBRARY ADMINISTRATION :

*Doubleday, W. E.*—Manual of Library Routine. 1933. Allen & Unwin. 10s. 6d.

*Cant, Monica.*—School and College Library Administration. 1936. Allen & Unwin. Rs. 5.

### 4. ELEMENTARY REFERENCE WORK AND BIBLIOGRAPHY :

*Cowley, J. D.*—Use of Reference Material. 1937. Grafton. 7s. 6d.

*Supplementary list of books recommended for advanced reading :—*

**I. Classification**

1. *Kelley, G. O.*—Classification of Books ; an Inquiry into its usefulness to the reader. 1938. (H. W. Wilson Co.)

**II. Cataloguing & Indexing**

1. *MacPherson, H. D.*—Some practical problems in cataloguing. 1936.

**III. Library Organisation and Administration**

1. *Butler, Pierce.*—Introduction to Library Science. 1938. (University of Chicago).
2. *Hewitt, A. R.*—Law Relating to Public Libraries in England and Wales. 1930. (Eyre & Spottiswoode, London).
3. *McDiarmid, E. W. Jr.*—Library Survey, Problems & Methods. 1940. (A. L. A.)
4. *McComb, D. Q.*—Public Library Buildings, their financing, design, construction, equipment and operation. 1935.
5. *Randall, W. M.*—College Library. 1939. (A. L. A.)
0. *Thornton, J. L.*—Special Library Methods ; an introduction to special librarianship. 1940. (Grafton & Co.)

**IV (a). Reference Work**

1. *Adler, M. J.*—How to Read a Book ; the art of getting a liberal education. 1940. (Simon & Schuster, N. Y.)
2. *Headley, L. A.*—Making the most of Books. 1932. (A. L. A.)
3. *McColvin, Lionel.*—How to use books and enjoy them. 1933. (Humphry Toulman).

**IV (b). Book-selection**

1. *Wellard, J. H.*—Book Selection, its principles and practice. 1937. (Grafton & Co.)

**V (b.) Bibliography**

1. *Lydenberg, H. M. & Archer, John.*—Care and Repair of Books. 1935. (R. R. Bowker Company).

General Reading

1. *Bostwick, A. E.*—Life with Men and Books. 1939. (H. W. Wilson Co.)
  2. *Bostwick, A. E.*—Popular Libraries of the World. 1933. (A. L. A.)
  3. *Danton, E. M.*—Library of Tomorrow; a Symposium. 1939. (A. L. A.)
  4. *Kuhlman, A. F. ed.*—Archives and Libraries. 1939. (A. L. A.)
  5. *Sharp, H. A.*—Libraries & Librarianship in America; a British commentary and comparison; with an introduction by J. L. Wheeler. 1936. (Grafton & Co.)
  6. *Raney, M. L.*—University Libraries. 1933. (University of Chicago).
  7. *Dutt, N. M.*—Baroda and its Libraries. 1928. (Baroda Central Library).
  8. *Esdaile (Arundell).*—The World's Great Libraries. 2 vols. 1934-37.
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# APPENDIX V.

## ACCOUNTS OF THE INDIAN LIBRARY ASSOCIATION

*Receipts and Payments account for the year ended 31st March, 1940.*

RECEIPTS.				PAYMENTS.					
To Balance as on 1st April, 1939—				By Ordinary Expenditure—					
With Imperial Bank of India—				Establishment ...					
On Current Account ...				2,299	14	6	182	0	0
With Hon'y. Secretary ...				10	6	3	85	2	0
							61	3	6
							45	0	0
Ordinary Receipts—							18	3	0
Subscriptions from Ordinary Mem- bers, Associations and Libraries—							18	3	0
For 1938-39 ...				92	0	0	2	12	0
" 1939-40 ...				565	8	0			
" 1940-41 ...				15	4	0			
									352 7 0
Donations for Union Catalogue ...									
Sale of Directory and Proceedings ...									7 9 0
including Postage ...									
Sale of the Report of the Association ...									
for the period from 1935 to 1939 ...							8,284	6	9
Registrar, Agra University in payment ...							28	14	0
of their Subscription to Imperial ...									
Library ...									3,318 4 9
Total ...									3,672 12 3



*Receipts and Payments Account for the year ended 31st March, 1941.*

**RECEIPTS.**

To Balance as on 1st April, 1940—  
With Imperial Bank of India  
On Current Account

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**PAYMENTS.**

By Ordinary Expenditure—

Establishment

Postage and Telegrams

Printing and Binding charges

Subscriptions

General Charges

Books and Stationery

Bank Charges

Balance as on 31st March, 1941—

With Imperial Bank of India

On Current Account

Honorary Secretary

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Rs. A. P. Rs. A. P.

\*405 0 0

110 4 3

265 0 0

20 0 0

14 12 6

42 2 6

3 14 0

881 1 3

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57

82

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3,872 5 9

0 8 9

3,872 14 6

4,733 15 9

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We report that we have audited the Receipts and Payments Account for the year ended 31st March, 1941, and above set forth, and have obtained all the information and explanations we have required. In our opinion such Receipts and Payments Account is drawn up in conformity with the Bye-Laws of the Association and exhibits a true and correct view of the state of the affairs of the Association, according to the best of our information and the explanations given to us, and as shown by the books of the Association.

AVENUE HOUSE :  
Chowringhee Square,  
Calcutta, 31st July, 1941.

(Sd.) GEORGE READ & Co.,  
Chartered Accountants,  
Registered Accountants,  
Hony. Auditors.

\* Includes Rs. 200/- paid as part payment of honorarium to the Editor of Union Catalogue.

## APPENDIX VI.

## DRAFT MODEL INDIAN LIBRARIES ACT

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Note

Resolution No. 7 of the resolutions adopted at the Fourth Session of the All-India Library Conference read as follows :—

Resolved that a Committee be appointed to explore the possibilities of establishing free public libraries in at least all provincial capitals; and that the Committee be authorised to frame a model Indian Libraries Act to further the cause of the free Public Library movement.

In implementing the second part of this resolution, the Executive Committee of the Association could not think of a better person than Rao Sahib S. R. Ranganathan, M.A., L.T., F. L. A., Librarian, University Library, Madras, and Secretary of the Madras Library Association, to undertake this arduous task. Rao Sahib was good enough to accede to the request of the Committee, when approached in this direction, and has produced the Model Act that follows this Note. The Model Act is to be placed before the next meeting of the Council of the Association for their consideration, in April next. Copies of that are consequently being supplied to the members to enable them to study this Model Act, so as to be in a position to take part in the discussion that may follow.

K. M. ASADULLAH,  
*Honorary General Secretary.*

*Dated, Calcutta,  
The 10th March, 1942.*

## INTRODUCTION

1. The principles of the scheme underlying the organisation provided in this Model Act may be explained in brief outline.

2. The Metropolis, the District Municipalities, the District Boards and the Village Panchayats have, under existing legislation, power to establish and maintain libraries. But the enactments do not provide for any organisation or control in a manner that would foster the growth of a comprehensive system of libraries. There is, moreover, no adequate provision for undertaking schemes for the removal of illiteracy among adults in association with libraries. The Model Act is, therefore, outlined to satisfy these requirements.

3. The provisions of the Model Act do not in any manner impinge on the existing statutory provisions. On the other hand, existing facilities have been fully utilised and the Model Act only supplements those provisions by providing methods and machinery to work out the scheme.

4. The system of library organisation for a Province has necessarily to be of a two-fold type: one for the Municipal Towns and the other for the rural areas. For the Municipalities, the City Corporation or the District Municipal Councils would function as Local Library Authorities. For the rural areas, the District Boards of the Districts are constituted the Local Library Authorities. The functions of these two authorities would essentially vary. While the former would deal with the inhabitants of their areas directly by their library service, the latter would function as organisers of central reservoir libraries and reach the readers through the Panchayats who may themselves possess within their areas delivery stations or local libraries of essential literature, or through branches established in more populous Panchayats or Municipal areas. For this purpose, the District Boards would not only contribute to the library fund from their own resources, but may also take contributions from the villages or Panchayats or the Municipalities whom their library service reaches. In this manner the expansion of this movement from both sides, *viz.*, working down from District Boards as well as working up from the rural centres, the Panchayats, by mutual co-operation, is safeguarded and encouraged. Where a District Board proposes to adopt schemes for library service in its area, it would necessarily have to secure the co-operation of many villages and Panchayats and the smaller municipalities in its area.

5. Each Local Library Authority is to be advised by a Library Committee on which there would be at least two persons conversant with library matters. Provision is also made for the appointment of Sub-Committees and Village Library Committees, for co-operation between several Local Library Authorities, for the appointment of Joint Committees and for the constitution of Regional Committees to avoid wastage and secure economy. Adequate provision is thus made for the spread, in the most economical way, of library service in rural areas.

6. Some libraries have been established and are being maintained for public use by private agencies. While it is open for a Local Library Authority to propose, in its scheme, to convert any of them into a Public Library under its management on such conditions as may be agreed upon, the Act provides for the continuance of some of them as Aided Libraries. For this purpose a library grant-in-aid code is to be drawn up.

7. Provision is made for a Central Library at the metropolis as the apex of the library system of the Province. Its main purposes are :—

- (1) to act as a reservoir library to feed the other libraries of the Province with out-of-the-way books on which it may not be economical for the other libraries to invest money ;
- (2) to arrange for free inter-library loan among the libraries of the Province including Departmental and Outlier Libraries so that unnecessary duplication is avoided and the library system of the Province as a whole may be run most efficiently and on the most economical lines ; and
- (3) to maintain the Copyright collection classified and catalogued properly and made available for use in a liberal and active way.

There is also provision for Branches of the Central Library in the different linguistic areas of multilingual provinces like Madras and Bombay. The Central Library is also empowered to join in All-India schemes of library co-operation and co-ordination which may be brought about either by a Central Library Act providing for them or even in anticipation of such a Central Library Act.

It has been provided that existing metropolitan libraries under Government management like the Connemera Public Library of Madras and the Lahore Public Library may be converted

into the Central Library. There is also provision, in the alternative, for the Government to take over a metropolitan library under private management and convert it into the Central Library.

8. The ultimate control of Public and Aided Libraries is vested, as it should be, in the Provincial Government, who will administer the Department of Libraries through a Director of Libraries. The Provincial Government will be advised, whenever necessary, by a Provincial Library Committee, of which the Minister for Education and the Director of Public Libraries, will be the President and the Secretary respectively.

9. There is no compulsory clause in the Model Act. All clauses are optional. While many countries have compulsory clauses in their Library Acts compelling Local Bodies, on the one hand, to maintain Public Libraries and compelling the Government, on the other hand, to give grant-in-aid to all public libraries, there is a view that such a course may be too drastic for the present state of our country. Such a view is implied in the draft of the Model Act. It is believed that the appointment of a proper person as Director of Public Libraries backed by a liberal financial provision for libraries would go a long way in minimising the dangers of optional clauses. Indeed when public opinion and Government are for compulsory provision of libraries, the wording of section 4.3 of the Model Act will even arm them virtually with powers for compulsion.

I may add that in the provinces in which the Government has a Metropolitan Library the initial cost of starting with the Director's appointment will not be great. If he is invested with the powers, we may depend on his personality and drive to make other matters run smoothly and soon reach virtually the goal which a compulsory Act would connote.

S. R. RANGANATHAN

*University Library,  
Madras, 12-2-42.*

## PUBLIC LIBRARIES BILL

WHEREAS it is expedient to provide for the establishment and maintenance of a system of Public Libraries, and for the comprehensive development and organisation of rural and urban library service in the Province of — ,

IT is hereby enacted as follows :—

### CHAPTER 1

#### Preliminary

- |  |                 |
|--|-----------------|
| 1.1. This Act may be called the Public Libraries Act, 194 .  | Short Title     |
| 1.2. It shall extend to the whole of the Province of   | Local Extent    |
| 1.3. In this Act, unless there is anything repugnant in the subject or context :—  | Definitions     |
| (1) ' Director ' means the officer appointed by the Provincial Government to perform the duties of Director of Public Libraries.   | Director        |
| (2) ' Public Library ' means a Library including its branches and delivery stations established or maintained and managed by a Local Library Authority under the provisions of Chapter 4 of this Act or under the provisions of the Act relating to the body which has been constituted Local Library Authority. | Public Library  |
| (3) ' Central Library ' means the Central Library including its branches, if any, established or maintained and managed under the provisions of Chapter 14 of this Act.  | Central Library |
| (4) ' Aided Library ' means a Library in the Province (other than those coming in the categories enumerated above) recognised by the Director under the provisions of Chapter 15 of this Act   | Aided Library   |

**Departmental  
Library**

- (5) 'Departmental Library' means a Library in the Province (other than those coming in the categories enumerated above) established or maintained and managed by a Department or Institution of the Provincial Government or the Central Government or by a Statutory Body.

**Outlier Library**

- (6) 'Outlier Library' means a Library in the Province other than those coming in the categories enumerated above.

**CHAPTER 2****Control of Public and Aided Libraries****Appointment  
of Director**

2.1. The Provincial Government shall appoint the Director, lay down the conditions of his service and provide him with the necessary establishment.

**Duties of  
Director**

2.2. Subject to the control of the Provincial Government, the Director shall :—

- (a) manage the Central Library ;
- (b) superintend and direct all matters relating to Public and Aided Libraries and connected with the exercise of powers and performance of duties by local bodies under this act ; and
- (c) submit to the Provincial Government an annual report on the working of the library system under this Act.

**CHAPTER 3****Provincial Library Committee****Constitution**

3.1. The Provincial Government shall constitute a Provincial Library Committee for the purpose of advising them on all such matters arising under this Act as they may refer to it.

**Membership**

3.2. The Committee shall consist of :—

- (a) the Minister in charge of Education ;
- (b) the Minister in charge of Local-Self-Government or any officer deputed by him in his place ;

- (c) three persons elected by the members of the legislature ;
- (d) two persons appointed by the Executive of the Provincial Library Association, if any, and
- (e) two persons appointed by the Provincial Government.

3.3. The Minister in charge of Education shall be the President and the Director shall be the Secretary of the Committee.

President and Secretary

3.4. Members of the Committee other than *ex-officio* members shall hold office for three years from the date of their election or appointment, as the case may be.

Term of office

## CHAPTER 4

### Constitution of Local Authority

4.1. For the purpose of organising and administering Public Libraries there shall be a Local Library Authority for the area of each Municipality and each District Board, except that the area of a Municipality with a population of less than 30,000 may be deemed for the purposes of this Act to be part of the area of the District Board amidst whose area it lies.

Local Library Authority

4.11. Such Authority shall be :—

Its Constitution

- (a) for the Metropolis of the Province, the Corporation of the Metropolis ;
- (b) for a District Municipality, the Municipal Council thereof ; and
- (c) for the area of a District Board, the District Board of the area.

4.2. For the area of every Local Library Authority, there shall be a Library Committee, constituted in accordance with the scheme made under the provisions of this Act.

Library Committee

4.3. Any Local Library Authority may, and, if required by the Provincial Government, shall, submit to the Provincial Government, a scheme setting forth the manner in which it proposes to constitute the Library Committee for its area and to perform its

Submission of Scheme by Local Library Authority



duties and exercise its powers in relation to Public Libraries.

**Terms of  
Schemes**

4.31. Every scheme for the constitution of a Library Committee shall, wherever possible, provide, that not less than two of its members shall be persons, who, in the opinion of the Local Library Authority, possess special qualifications for serving on the Library Committee, though they may not be members of the Local Library Authority.

**Special terms of  
a District Board  
Scheme and  
Village Library  
Committee**

4.32. Every scheme submitted by a District Board shall specify the number of villages or panchayats or municipalities its library service is proposed to reach, any arrangements it has made with them for contribution to its library fund and other matters, if any, conducive to the efficiency of its rural library service. It may also provide for constituting Local Library Committees, wherever necessary, for advising its Library Committee on the local requirements.

4.33. A Municipality whose library powers and duties had been surrendered to a District Board, may, at any time after its population exceeds 30,000, ask for the restoration of library powers and duties by submitting a scheme specifying also any arrangements it has made with the District Board from which it seeks separation in regard to restoration of any library property to itself, the transfer of staff and other matters.

**Publishing of  
Scheme**

4.4. Before submitting a scheme under this chapter, the Local Library Authority shall publish its proposals in such manner as it may consider suitable or as the Provincial Government may require, and shall consider any representations made to it by any person or body of persons in respect thereof.

**Modification and  
replacement by  
new scheme**

4.5. Any scheme under this section, may, with the approval of the Provincial Government, be modified or replaced by a new scheme; and the provisions of section 4.4 shall apply to such new scheme in like manner as they apply to an original scheme.

**Approval of  
Scheme by  
Local Govern-  
ment**

4.6. The Provincial Government may approve any scheme submitted to them under this Act by a Local Library Authority, and thereupon it shall be the duty of the Local Library Authority to give effect to the scheme.

4.61. If the Provincial Government are of opinion that a scheme does not make adequate provision for all or any of the purposes to which the scheme relates or that the scheme requires modification for any other reason, they may return the same to the Local Library Authority with suggestions for its modification, and it shall be duty of the Local Library Authority to give effect to the finally approved scheme.

Return Scheme

## CHAPTER 5

### Powers and Duties of Library Committee

5.1. All matters relating to the performance of any duties or the exercise of any powers under this Act by a Local Library Authority (other than the power of raising a rate or borrowing money) shall be referred to the Library Committee appointed for its area, and the Local Library Authority before performing any duties or exercising any powers, shall receive and consider its report.

Reference to  
Library  
Committee

Provided that in cases where in the opinion of a Local Library Authority, a matter is urgent, such reference or consideration shall not be necessary.

Provided further that where action has been taken by a Local Library Authority on the ground of urgency, without such reference or consideration, a report of the action taken and the circumstances which necessitated the taking of such action, shall be placed before the Library Committee at its next meeting.

5.2. The Local Library Authority may delegate to the Library Committee, subject to such restrictions or conditions as it may impose, any powers or duties under this Act (other than the power of raising a rate or borrowing money).

Delegation to  
Library  
Committee

5.3. A Library Committee may, subject to any directions of the Local Library Authority, appoint such and so many sub-committees consisting either wholly or partly of members of the Committee, as it thinks fit.

Appointment of  
Sub-Committees

## CHAPTER 6

### Co-operation, and Constitution of Regional Committee

Arrangement for  
co-operation

6.1. For the purpose of performing any duties or exercising any powers under this Act, a Local Library Authority may enter into such arrangements as it may think proper for co-operation with any other Local Library Authority or Authorities and any such arrangements may provide for the appointment of a Joint Committee, for the delegation to that Committee of any powers or duties of the Local Library Authorities (other than the power of raising a rate or borrowing money), for the contribution to be paid by each such Local Library Authority, and for any other matters which may be necessary for carrying out the arrangement.

Report to the  
Director

6.11. A report of the arrangements made under sub-section 6.1 and of the constitution, powers and duties of the Joint Committee, if any, shall, within fifteen days, be made to the Director.

Constitution of  
Regional  
Committee

6.2. The Provincial Government may, on the application of two or more Local Library Authorities, by scheme provide for the constitution and establishment of a Regional Committee for their combined area, for such purposes as may be specified in the scheme as being purposes relating to matters of common interest concerning libraries which it is necessary or convenient to be dealt with in relation to a group of Local Library Authorities.

Provided that no Local Library Authority shall be included in such scheme without its consent and no Local Library Authority shall be obliged to continue in the scheme except in accordance with the provisions of the scheme to which it has consented.

Modification and  
replacement by  
new scheme

6.21. A scheme constituting a Regional Committee may, on the application of one or more of the Local Library Authorities concerned, be modified or replaced by a new scheme, and such scheme shall provide for dealing with any properties or liabilities of the Regional Committee, if the Regional Committee is to be discontinued.

6.3. Where a Regional Committee has been constituted as above-mentioned, it shall exercise such of the powers and perform such of the duties of a Local Library Authority (other than the power of raising a rate or borrowing money), as may be necessary for carrying out the purposes for which it was constituted.

**Powers of  
Regional  
Committee**

## CHAPTER 7

### Powers and Duties of Local Library Authority

7.1. All movable and immovable properties required or held for any Public Library, or for any of the purposes of this Act, shall be vested in the Local Library Authority concerned.

**Vesting of  
Property**

7.2. The Local Library Authority may, for organising and administering its Public Libraries or for exercising any powers or performing any duties under this Act—

**Powers and  
Duties of  
Local Library  
Authority**

- (a) provide suitably-fitted buildings, books, periodicals, newspapers, maps, specimens of Art and Science, lantern slides, cinema reels, apparatus, and other necessary materials and conveniences ;
- (b) acquire, purchase or hire land or other properties, and erect, take down, rebuild, alter, repair and extend buildings and fit up, furnish and supply the same with the requisite furniture, fittings and conveniences ;
- (c) accept any endowment or gift for any purpose connected with this Act ;
- (d) subject to the rules framed by the Provincial Government in this behalf, appoint salaried officers and servants, punish and dismiss them ; and
- (e) provide for lectures and such other activities as may be conducive to the carrying out of the purposes of this Act.

7.21. With the previous sanction of the Provincial Government, the Local Library Authority may discontinue any Public Library provided by it or change the site of any such institution.

**Discontinuance  
of Public  
Library and  
change of site**

Enquiry before  
scheme for  
removal of  
illiteracy  
among adults

7.3. Where in the opinion of a Local Library Authority, the adult population within its area or any part or class thereof is unable by reason of illiteracy to take full advantage of the benefits of the library service provided by it, it may cause an enquiry to be made by the Library Committee touching the conditions as regards such illiteracy within the area, other schemes at work for the removal of the same, the funds, other than public funds available for the purpose, and all other relevant matters.

Scheme for  
removal of  
illiteracy

7.31. The Local Library Authority shall then consider the report of the enquiry furnished by the Library Committee and submit a scheme to the Provincial Government, for consideration and sanction, setting forth any proposals as to the manner in which it intends to provide for the removal of illiteracy and the funds it proposes to spend for the purpose.

Co-operation  
with other  
persons or  
bodies

7.32. Without prejudice to the powers above-mentioned, it shall be competent to a Local Library Authority, for the like purpose,

- (a) to associate with any person or body of persons willing to co-operate in the matter; and
- (b) to aid such person or body of persons by giving the use of such of its lands, buildings, furniture, apparatus, or other property, as may be necessary;

But, save as provided in a scheme approved by the Provincial Government, it shall not expend moneys or make grants.

## CHAPTER 8

### Admission to Public Libraries

Admission to  
Public Libraries

8.1. No charge shall be made for admission to a Public Library provided by a Local Library Authority or, in the case of a lending library, for the use thereof by the inhabitants of the area of such Local Library Authority; but the Library Authority, if it thinks fit, may grant the use of a lending library to persons not being inhabitants of the area, either gratuitously or for payment.

8.2. Subject to the provisions of this Act, a Local Library Authority may make Library Rules,

Bye-laws by  
Local Library  
Authority

- (a) for regulating the use of the Public Libraries, under its control, the contents thereof and the admission of public thereto or to its use;
- (b) for protecting the same and the furniture and contents thereof from injury, misuse or destruction;
- (c) for requiring any guarantee or security from any person using them and against the loss of or injury to any books or other articles; and
- (d) for enabling the officers and servants of the Local Library Authority to exclude or remove therefrom any person offending against the provisions of this Act or Library Rules.

8.3. Any person

Offences and  
punishment

- (i) who in a public Library or other Institution maintained under this Act, to the annoyance or disturbance of any person using the same

- (a) behaves in a disorderly manner; or

- (b) uses violent, abusive, or obscene language; or

- (ii) who, after proper warning, persists in remaining therein beyond the hours fixed for closing; shall be liable to be excluded or removed forthwith from the premises, and shall also be liable on conviction to a penalty not exceeding Rs. 10.

8.31. An offence committed under Section 8.3 shall be triable in the manner provided for summary trials by Chapter XXII of the Code of Criminal Procedure, 1898.

Trial of  
Offence

## CHAPTER 9

### Acquisition and Alienation of Lands

9.1. Any immovable property required by a Local Library Authority shall be deemed to be land needed for a public purpose within the meaning of

Acquisition  
under Land  
Acquisition Act

Section 4 of the Land Acquisition Act of 1894, and may be acquired under that Act.

Alienation of  
land

9.2. A Local Library Authority may, with the approval of the Provincial Government, sell any lands or buildings vested in it, or exchange any such lands or buildings for any other lands or buildings and the money arising from the sale or received in part exchange, shall be used for the purchase of other lands or may be applied for any purposes for which capital money may be applied, as approved by the Provincial Government.

## CHAPTER 10

### Finance

Power to raise  
rate

10.1. With the previous sanction of the Provincial Government, a Local Library Authority may raise a library rate in such manner and at such rate as may be determined by it from time to time.

Mode of  
collection

10.11. Such rate shall be liable to be collected in the same manner as other taxes payable to the body which has been constituted the Local Library Authority.

Library Fund

10.2. Every Local Library Authority shall maintain a fund called the Library Fund from which its expenses shall be met.

Credits to  
Library Fund

10.21. To this fund shall be credited,

- (a) any amount raised as library rate ;
- (b) the amounts, if any, which may be transferred to it from the general funds of the body which has been constituted the Local Library Authority ;
- (c) amounts realised from endowments, if any ;
- (d) any contributions received from other bodies, or persons ;
- (e) any amounts collected under the Library Rules or under the Bye-laws ;
- (f) any amounts that the Provincial Government may contribute towards the fund ; and

- (g) any special grants that the Provincial Government may make for specific purposes, with or without conditions or limitations.

10.3. A Local Library Authority may with the sanction of the Provincial Government borrow money for any of the purposes under this Act on such security as the Provincial Government may approve.

Power to borrow

## CHAPTER 11

### Accounts, Audit, Etc.

11.1. Separate accounts shall be kept of the receipts and expenditure of a Local Library Authority and the same shall be audited like the other accounts of the local body constituted the Local Library Authority. The audited statement and the report accompanying it shall be published in such manner as the Provincial Government may require.

Maintenance of Accounts

11.2. All accounts maintained by a Local Library Authority shall be open, at all reasonable hours, to inspection by any rate-payer within the area and he may make copies and extracts.

Inspection of Accounts

## CHAPTER 12

### Inspection, Returns, Reports, Etc.

12.1. The Provincial Government may by their officers or by other organisation inspect any Public Library or other institution maintained by a Local Library Authority for the purpose of satisfying themselves whether the purposes of this Act are being properly fulfilled.

Inspection of Public Library

12.2. It shall be competent to the Provincial Government to hold a public enquiry for the purpose of exercising any of their powers or performing any of their duties under this Act.

Public Enquiry

12.21. A copy of the report of such enquiry shall be furnished to the Local Library Authority concerned before action is taken upon it.

Report to be furnished to Local Library Authority



**Reports,  
Returns and  
Information to  
Local  
Government**

12.3. A Local Library Authority shall send such reports and returns and give such information to the Provincial Government as they may require.

12.4. A report on the progress made by the local bodies in regard to the working of this Act together with a list of the Local Library Authorities showing the number of libraries, branches and delivery stations maintained by them and such other information as may be prescribed by rules shall be incorporated in the annual report prescribed by Section 2.2 of this Act.

## CHAPTER 13

### Rules and Bye-Laws

**Power to make  
Rules by  
Provincial  
Government**

13.1. The Provincial Government may, by notification in the Official Gazette, make rules consistent with this Act for carrying into effect the purposes of this Act.

**Subject matter  
of Rules**

13.11. In particular and without prejudice to the generality of the foregoing power, such rules may provide,

- (a) for the constitution of Provincial Library Committee ;
- (b) for prescribing outlines of the scheme to be submitted under Chapter 4 and the manner in which publicity shall be given to any proposed scheme ;
- (c) for the maintenance of the minutes of proceedings by Local Library Authorities and where any powers and duties have been delegated to Library Committees, by such Committees;
- (d) for the accounts to be maintained by the Local Library Authorities and where any powers or duties have been delegated to Library Committees, by such Committees ;
- (e) for the auditing of the accounts, the conditions under which rate-payers may appear before the auditors, inspect books and vouchers and take exception to items

entered therein or omitted therefrom and the publication of the audited statement and the report accompanying it ;

(f) the conditions of service of the salaried officers and servants of the Local Library Authority ; and

(g) for all other matters which have to be dealt with by rules under this Act.

13.2. The Local Library Authority shall have power to make bye-laws, not inconsistent with this Act or the rules made thereunder for efficient exercise of its powers, the due fulfilment of its duties and the proper administration and execution of this Act.

Power to make  
bye-laws by  
Local Library  
Authority

13.21. Such bye-laws may provide,

Subject matter  
of bye-laws

(a) for the procedure and meetings of the Library Committee ;

(b) for defining the powers and duties of the Library Committee ;

(c) for defining the powers and duties of Local Library Committees ;

(d) for the due performance by all its officers and servants of the duties assigned to them ; and

(e) for all other matters which have to be dealt with by bye-laws under this Act.

13.22. A copy of the bye-laws made under this section shall be submitted, as early as possible, to the Provincial Government, who may suggest such alterations or amendments thereof, as they may think fit, and such alterations and amendments shall be binding on the Local Library Authority.

Submission of  
bye-laws to  
Provincial  
Government

## CHAPTER 14

### Central Library

14.1. The Provincial Government shall establish or maintain and manage a Central Library at the metropolis or any other suitable place to function as a reservoir for Public Libraries and Aided Libraries.

Establishment  
of Central  
Library

14.11. Any existing library under governmental or other management may be converted or taken over by negotiation and agreement and converted into the Central Library.

**Establishment of  
Branch Central  
Libraries**

14.12. (Special section for multi-lingual provinces.) The Provincial Government may establish a Branch of the Central Library for each of such linguistic areas of the province as may be determined by it and at such place as it may select to facilitate the building up of an adequate collection in the language concerned and its being served to the Public Libraries and the Aided Libraries in that area.

14.121. Any existing library under governmental or other management may be converted or taken over by negotiation and agreement and converted into a Branch of the Central Library.

**Management of  
Central Library**

14.2. The affairs of the Central Library shall be managed by the Director and the Provincial Library Committee may appoint an Advisory Committee including non-members of the Provincial Library Committee, if necessary, with the Minister-in-charge of Education as Chairman and the Director as Secretary for the purpose of advising on all matters connected with the Central Library.

**Management of  
Branch Central  
Library**

14.21. An Advisory Committee may be appointed for each Branch of the Central Library on lines similar to that of the Central Library.

**Central Library  
Fund**

14.3. There shall be a Central Library Fund from which the expenses of the Central Library, the salary of the Director and his establishment, and the expenses incidental to the meeting of the Provincial Library Committee, shall be met.

**Credits to the  
Fund**

14.31. To this Central Library Fund shall be credited,

- (a) the amount provided for the purpose in the Budget of the Provincial Government ;
- (b) amounts realised from endowments, if any ;  
and
- (c) any contributions received from other bodies or persons.

14.4. The Central Library may maintain

- (a) a Bureau for Inter-Library Loan ;
- (b) a Bibliographical Bureau ; and
- (c) a Bureau of Copy rights.

Managing  
Bureaus

14.41. The Bureau for Inter-Library Loan may include in the scheme of inter-library loan such Departmental Libraries, Aided Libraries and Outlier Libraries as are willing to join the scheme on such conditions as may be agreed upon.

Extent within  
the Province

14.411. The Bureau of Inter-Library Loan may enter into any scheme of inter-provincial library loan that may be available on such conditions as may be agreed upon by the participating Provincial Governments and the Central Government and approved by the Provincial Government.

Inter-Provincial  
work

14.412. A report of the working of the Bureau of Inter-Library Loan shall be incorporated in the Annual Report prescribed by Section 2.2 of this Act.

Report

14.42. The Bibliographical Bureau may admit into its scheme of work other agencies like learned bodies, departments of the Provincial Government and Universities.

Extent

14.421. The Bibliographical Bureau may collaborate with similar Bureaus or agencies of other Provincial Governments and the Central Government, if any, and undertake such bibliographical activities as may fall to its share by mutual agreement with such other provincial and central agencies, with the approval of the Provincial Government.

Inter-Provincial  
work

14.422. A report of the working of the Bibliographical Bureau shall be incorporated in the Annual Report prescribed by Section 2.2 of this Act.

Report

14.43. The Provincial Government shall appoint the Director as the officer to discharge the duties and exercise the powers laid down in Parts III and V of the Press and Registration of Books Act, 1867, and the function of the Bureau of Copyrights is to assist him in this matter.

Copyright duties  
and powers

14.431. One copy of each of the printed materials received in the Bureau of Copyrights under the Press and Registration of Books Act, 1867, shall be kept

Copyright  
collection

in the Central Library as a separate Copyright Collection for reference within the library premises but not for loan of any kind, except that one copy of each newspaper shall be transmitted to such officer as the Provincial Government may direct.

[ Alternative form if there are Branches  
of the Central Library.]

The printed materials received at the Bureau of Copyrights under the Press and Registration of Books Act, 1867, shall be distributed for deposit as follows :

- (a) one copy of each newspaper to such officer as the Provincial Government may direct ;
- (b) one copy of the materials exclusively in a language of a Branch of the Central Library in that Branch ;
- (c) one copy of all other materials in the Central Library.

The Copyright collections in the Central Library and the Branches of the Central Library shall be kept as separate collections for reference within the library premises but not for loan of any kind.

Report

14.432. A report of the working of the Copyright Bureau shall be incorporated in the Annual Report prescribed by Section 2.2 of this Act.

## CHAPTER 15

### Aided Libraries

Library  
Grant-in-Aid  
Code

15.1. The Provincial Government shall frame and publish a Library Grant-in-aid Code to regulate the recognition, aid, inspection, co-ordination and the standards to be kept up in regard to the maintenance of Aided Libraries.

Grant-in-aid  
Fund

15.2. There shall be a Library Grant-in-aid Fund from which grants will be disbursed to aided libraries by the Director in accordance with the library grant-in-aid code.

15.21. To this fund shall be credited,

Credits to the  
Grant in-aid  
Fund

- (a) the amount provided for the purpose in the budget of the Provincial Government ;
- (b) amounts realised from endowments, if any ;  
and
- (c) any contributions received from other bodies or persons.

15.3. A report on the working of the Aided Libraries together with a list of them showing their branches and delivery stations, if any, maintained by them, the grant-in-aid disbursed to them, and such other information as may be prescribed by the rules shall be incorporated in the Annual Report prescribed by Section 2.2 of the Act.

Report

## APPENDIX VII.

### Scheme regarding starting a journal of the Association :—

1. The Association shall have an organ of its own to disseminate the news about its activities and publish papers and matters pertaining to libraries and librarianship, in general.
2. It shall be called the "LIBRARY BULLETIN," and will be published once every quarter, *viz.*, in April, July, October and January of each year,
3. It will be started from April, 1942.
4. It will be supplied free of charge of members of the Association, but on payment, in advance of an annual subscription of Rs. 3/—, to non-members.
5. It will be issued in Royal octavo size, and generally have not less than forty pages per issue.
6. It will be conducted by two Associate Editors, and a Board of Assistants. The first Associate Editors and the Board will consist of :—

#### Associate Editors :

Dr. N. Ray, Librarian, Central Library, Calcutta University, Calcutta.

Khan Bahadur K. M. Asadullah, Librarian, Imperial Library, and Hony. General Secretary of the Association.

#### Board :

Madras      ...      Dr. M. Q. Thomas, Deputy Librarian, Madras University Library, Madras, and the Librarian, University Library, Andhra University, Waltair.

Bombay and Sind      ...      Dr. P. M. Joshi, Librarian, Bombay University Library, Bombay.

Central Provinces, Berar and Central India,      Mr. Y. M. Muley, Librarian, Nagpur University Library, Nagpur.

Punjab and N.W.F.P. ...      Mr. S. S. Saith, Librarian, Punjab University Library, Lahore.

United Provinces, Western Districts, i.e., Lucknow and North-Western Districts.	Mr. S. Bashir ud din, Librarian, Lytton Library, Mulsim University, Aligarh, and
United Provinces, Eastern District, i.e., Districts East of Lucknow.	Mr. G. S. Misra. Librarian, University Library, Hindu University, Benares.
Bihar and Orissa ...	Mr. D. S. Trivedi, Assistant Librarian, Patna University Library, Patna.
Delhi and Rajputana ...	Mr. R. Gopalan, Librarian, Imperial Secretariat Library, Government of India, New Delhi.
Bengal and Assam ...	Mr. S. Chatterjee, Librarian, Commercial Library, Department of Commercial Intelligence, Calcutta.
Hyderabad ...	Mr. Yusuf ud din Ahmad, Librarian, Osmania University, Hyderabad-Deccan.
Mysore ...	Mr. A. N. Narasimhia, Librarian, University Library, Mysore University, Mysore.

7. The members of the Board shall represent their respective areas and help the Editors by collecting news and material for publication in the Bulletin and in such other manner, as may be required of them.
8. The management of the Bulletin shall be in the hands of the Associate Editors, but suggestions for its improvement will be welcome.
9. The BULLETIN will publish advertisements on payment. An Advertiser shall be entitled to a free copy of the issue in which his advertisement appears.
10. The rate of charges for advertisements shall be as follows :

	<i>Full page.</i>	<i>Half page.</i>	<i>Quarter page.</i>
One quarter ...	Rs. 15	Rs. 8	Rs. 5
Half-year ...	Rs. 25	Rs. 15	Rs. 8
One year ...	Rs. 40	Rs. 25	Rs. 15
11. The Honorary Secretary of the Association shall be the publisher of the BULLETIN.
12. The office of the Bulletin shall be where that of the Honorary Secretary is.